

# KH-3500 HG

## PIONEER STEREO MUSIC CENTRE

### SERVICE MANUAL

EINGANG

4. SEP. 1976

Baldet



Original

### SPECIFICATIONS

Semi-Conductors . . . . . AF: 41 Transistors, 10 diodes  
RF: 1 IC, 9 transistors, 8 diodes

#### AMPLIFIER SECTION

Continuous Power Output  
(40 Hz~40 kHz, both  
channels driven) . . . . . 10W + 10W/8Ω, 12W + 12W/4Ω  
Total Harmonic Distortion  
(Continuous Rated Power  
Output) . . . . . No more than 1%

Output Impedance . . . . . 8Ω (Speaker and headphones)

Input Level . . . . . MIC: 0.5 mV

LINE (AUX): 75 mV

Input Impedance . . . . . MIC: 600Ω (Matching Impedance)

LINE (AUX): More than 50kΩ

#### RADIO SECTION

Frequency Range . . . . . FM: 88 ~ 108 MHz  
MW: 525 ~ 1,605 kHz

LW: 150 ~ 350 kHz

Sensitivity . . . . . FM: 2.5μV (IHF)

MW: 160μV/m (Bar Antenna  
IHF)

LW: 500μV/m (Bar Antenna)

#### TAPE DECK SECTION

Cartridge . . . . . PHILIPS-type cassette  
(C-30, C-60, C-90)

Wow and Flutter . . . . . 0.15% (WRMS)

Rewind Time . . . . . Approx. 95 sec. (C-60)

Fast Forward Time . . . . . Approx. 95 sec. (C-60)

Cross Talk . . . . . More than 60dB

Signal to Noise Ratio . . . . . More than 45dB

Erasing Ratio . . . . . More than 60dB

#### PHONO SECTION

Speed . . . . . Two speed: 33-1/3 and 45 rpm

Wow and Flutter . . . . . Less than 0.08%

Motor . . . . . 4 pole synchronous type

Cartridge . . . . . PC-135 induced magnet type

Stylus point: 0.6 mil diamond

Stylus for replacement: PN-135

Tracking force: 1.8g to 2.3g

Power Requirements . . . . . AC 220/240V 50 Hz

Power Consumption . . . . . Less than 55W

Dimensions (WxHxD) . . . . . 510 x 235 x 420mm

(20-1/8 x 9-1/4 x 16-1/2 in.)

Weight . . . . . 13.6 kg (30 lbs)

 PIONEER

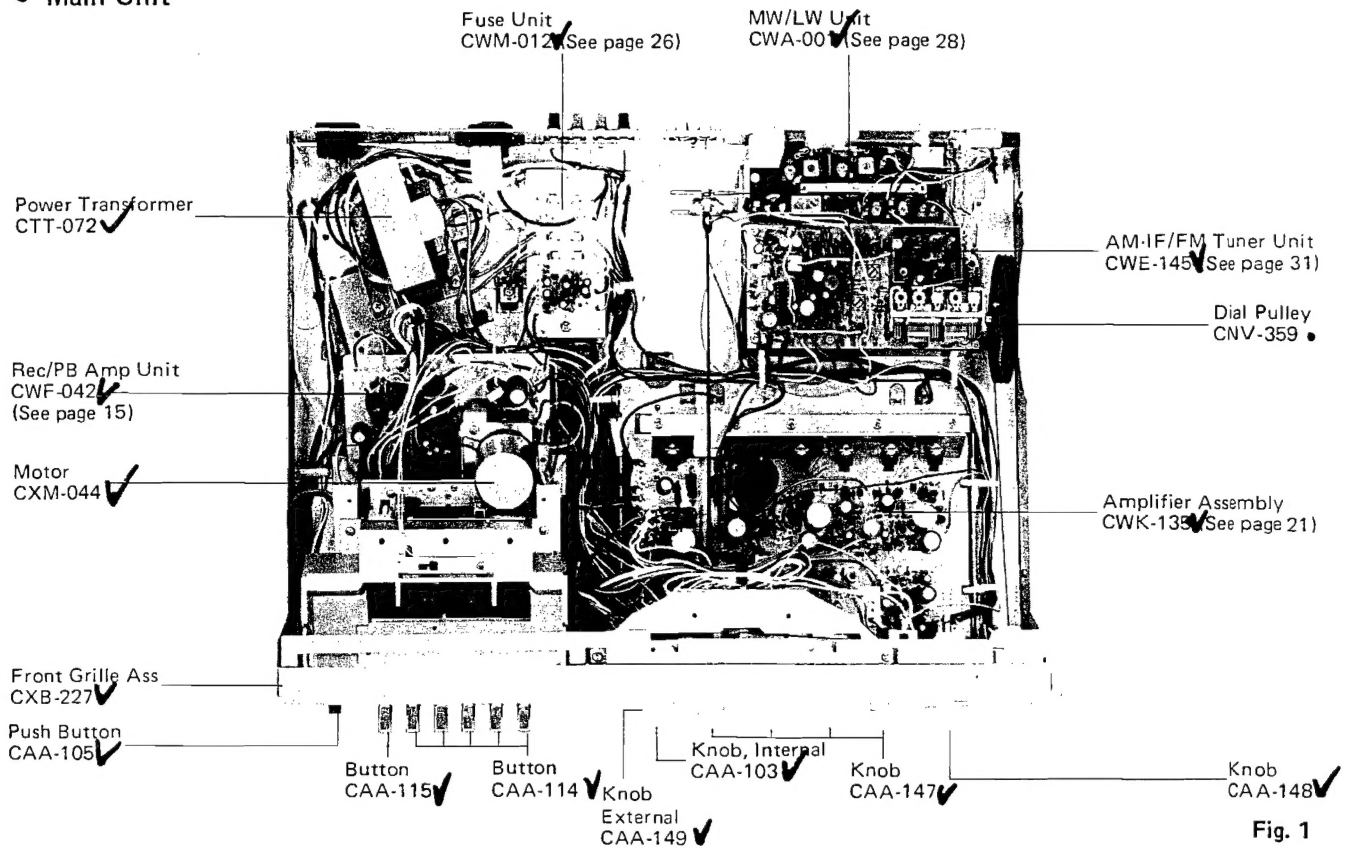
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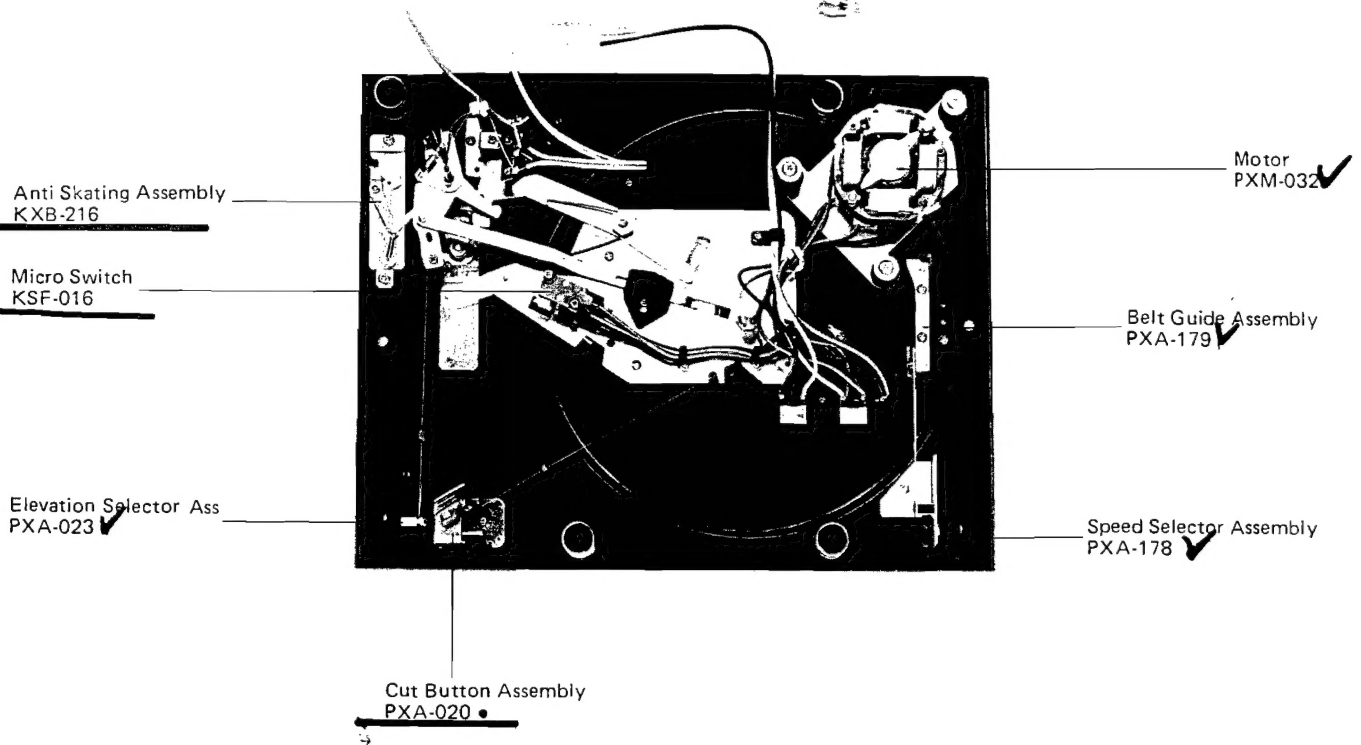
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# 1. PARTS LOCATION KH-3500

## • Main Unit



## • Player Unit



## 2. CIRCUIT DESCRIPTION

### • Circuit Block Diagram in Playback Mode

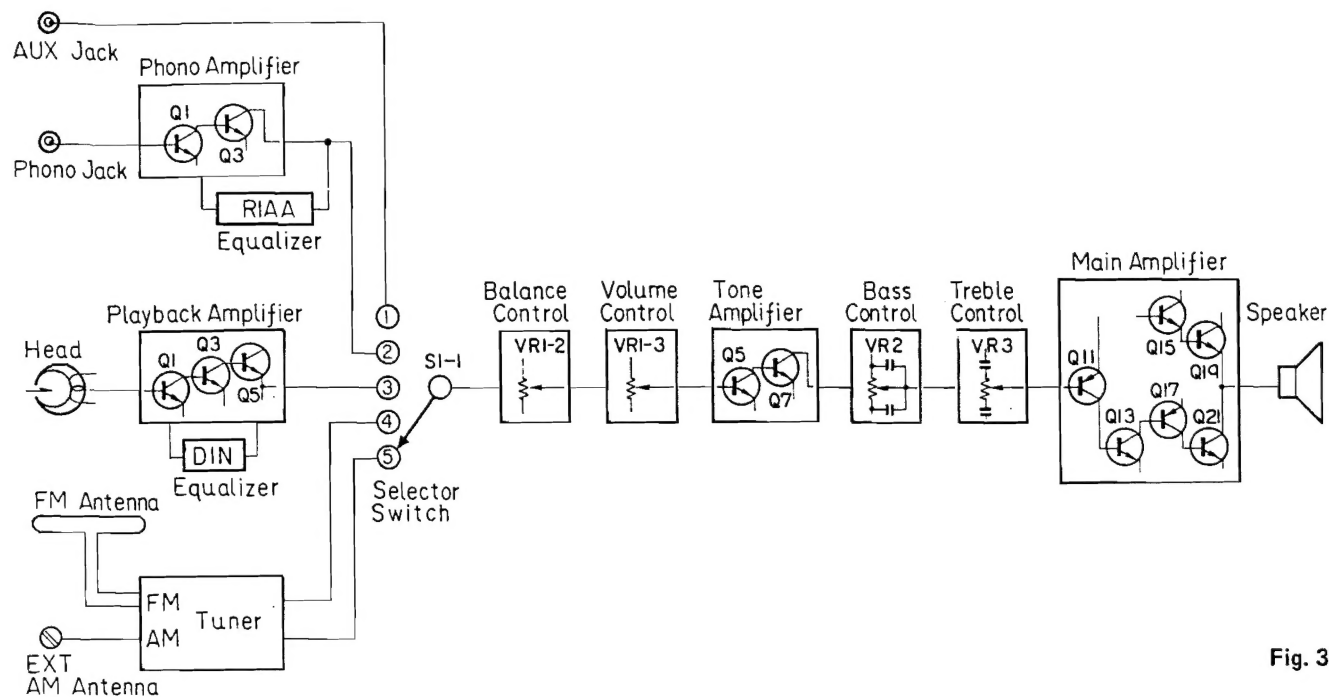


Fig. 3

Selector switch S1-1, is used to select AM, FM, TAPE, PHONO and AUX modes of operation. When TAPE is selected, the signal from the cassette tape is amplified by the playback amplifier (3-stage direct connection amplifier). When PHONO is selected, the signal is amplified by the phono amplifier (2-stage direct connection amplifier). Going through VR1 this signal is amplified by the

tone amplifier (gain 30 dB) and transmitted to the tone control (VR2, 3). It is further amplified by the main amplifier (gain 31 dB) and then sent to the speaker. Figures 4-A and 4-B illustrate the characteristics of the equalizer of the playback amplifier and the phono amplifier.

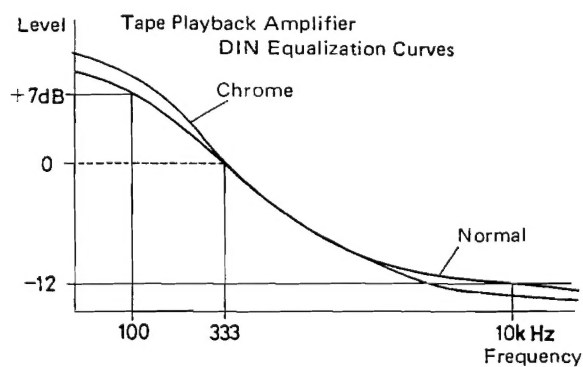


Fig. 4-A

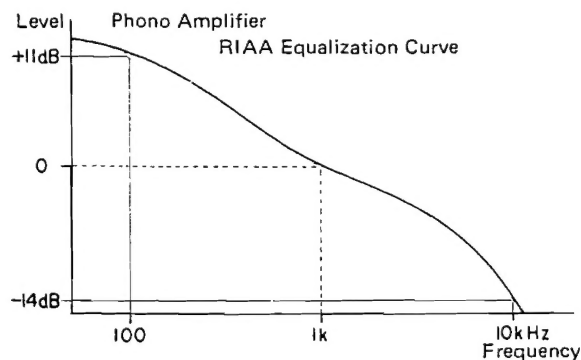


Fig. 4-B



### • Circuit Block Diagram in Record Mode

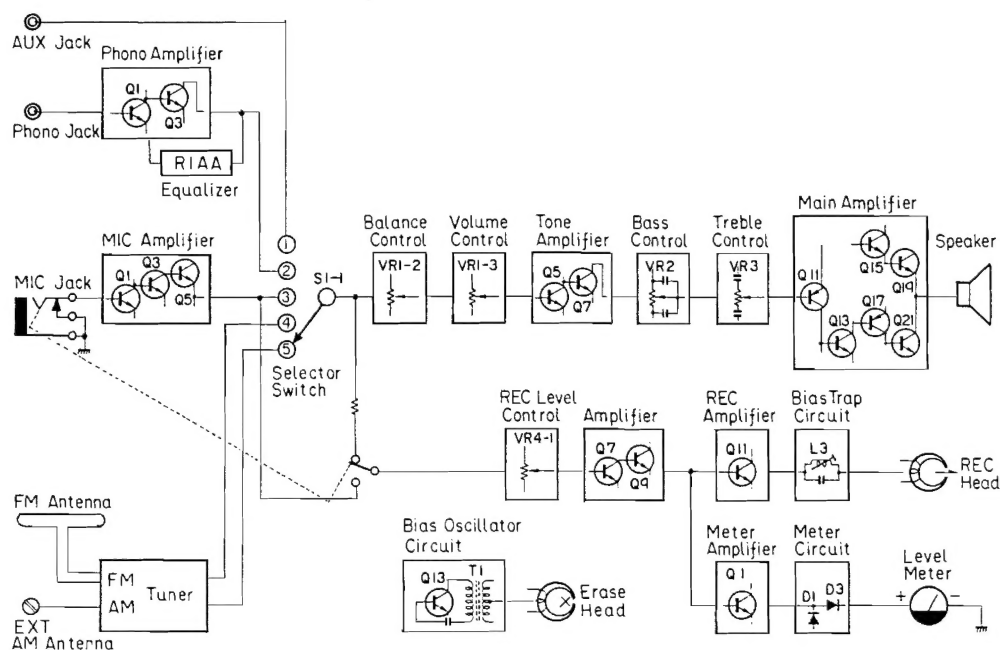


Fig. 5

Signals selected by selector switch S1-1 undergo level control of VR4-1 (REC level control), amplified by the direct connection amplifier and then transmitted to the REC amplifier. These signals are finally sent to the REC head. The bias oscillator (Q13) oscillates at about

60kHz. When a microphone is inserted into the MIC jack, the MIC jack switch is automatically changed and only microphone signal is recorded regardless of the position of the selector switch. To monitor MIC signals from the main amplifier, set the selector switch at TAPE.

### • Level Meter Circuit

Signals transmitted to the 2-stage direct connection amplifier (Q7, 9) are amplified, and the emitter follower circuit (Q1) are regulated, and the two diodes (D1, 3) perform half-wave, voltage doubler rectifier circuit and actuate the level meter. This level meter functions during both recording and playback (Fig. 6).

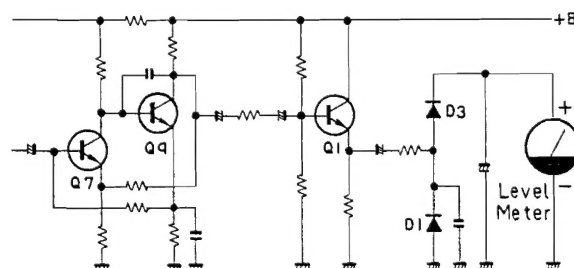


Fig. 6

### • Full Auto Stop Circuit

As long as the tape is running, magnet turns, reed switch (S3) repeats ON-OFF, Q14 also repeats ON-OFF and a pulse is emitted. By means of this pulse, the electrical potential of "A" repeats rise and fall at a voltage lower than 7V. When the magnet stops turning (tape stops running), the electrical potential of "A" rises and capacitor C59 is charged. Then Q15 and 16 becomes ON and the solenoid is actuated. When the solenoid creates suction, the interlocked lever starts motion to actuate the auto stop mechanism. S4 is interlocked with the PAUSE lever, and so designed that the solenoid does not function even if the tape stops running while S5 is pushing the PAUSE lever. S5 is interlocked with the PLAY lever, and with the PAUSE lever engaged, F.F. and REW can be performed and the auto stop circuit functions when the tape comes to the end.

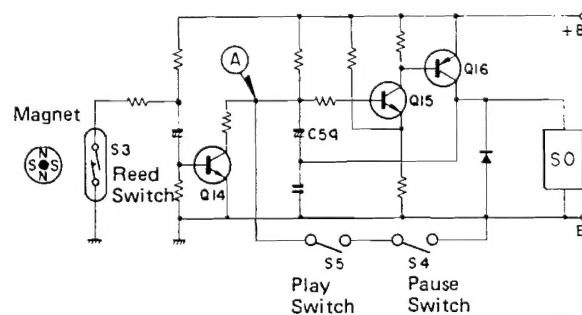


Fig. 7

## CIRCUIT DESCRIPTION

### • FM/AM (MW and LW) Tuner Block Diagram

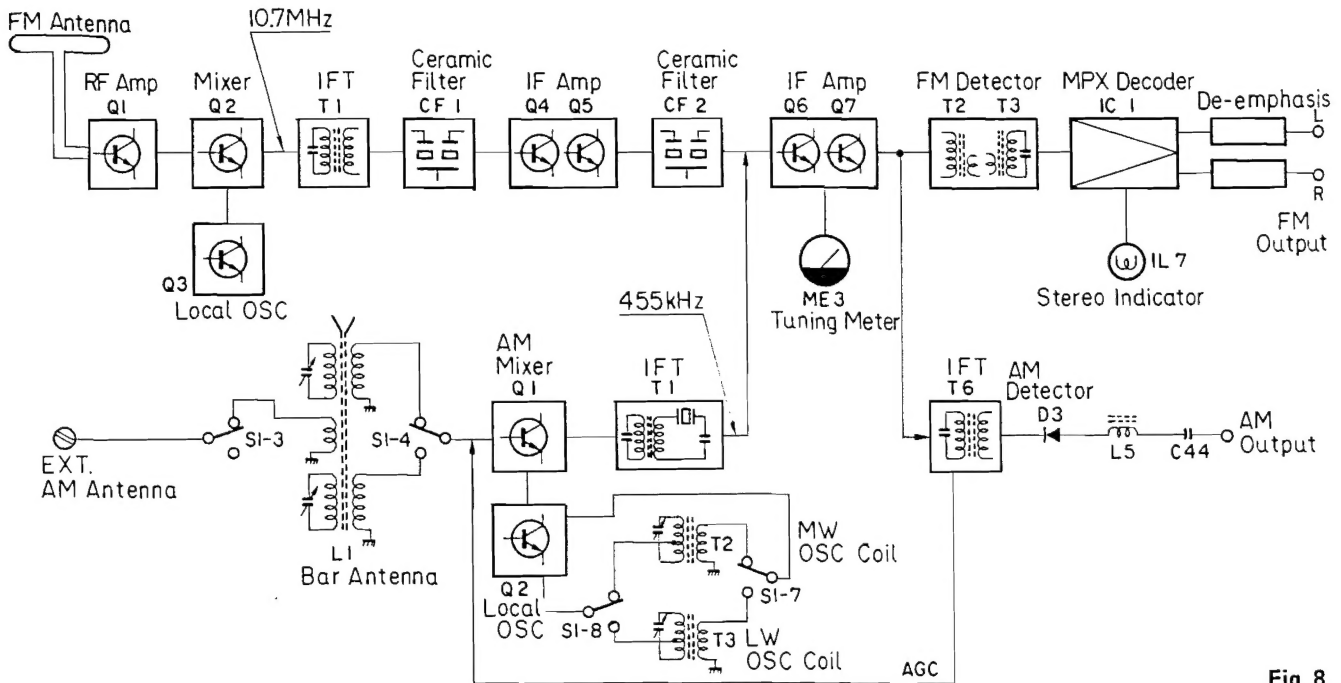


Fig. 8

## 3. DISASSEMBLY

### • Cabinet Disassembly

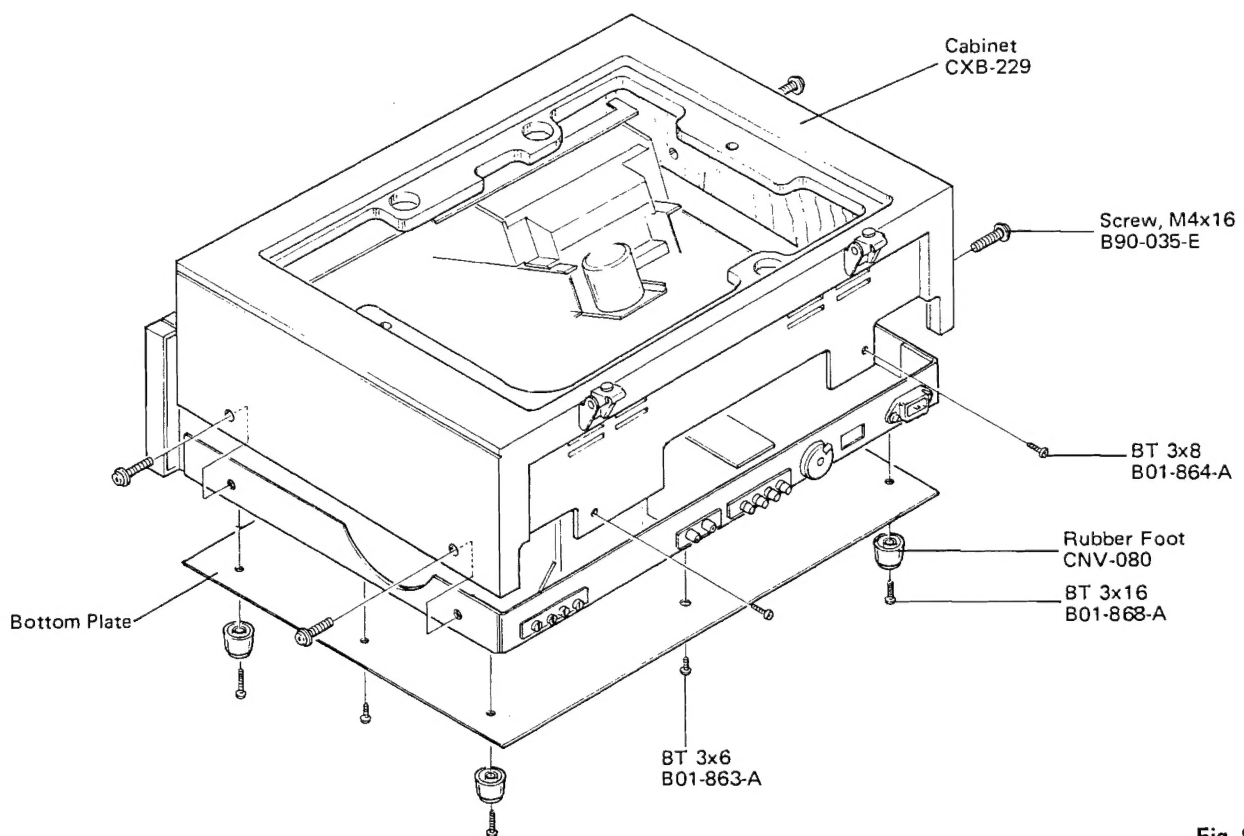


Fig. 9

### • Replacement of Buttons

When replacing buttons (REC, REW, F.F., PLAY, STOP/EJECT and PAUSE), pull them straight out. Do not bend or turn the levers to avoid deformation.

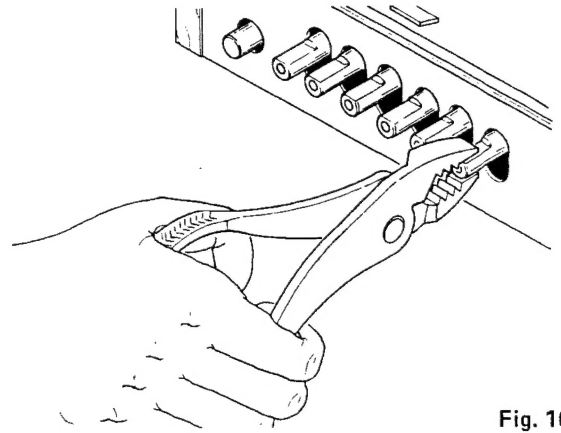


Fig. 10

## 4. ADJUSTMENT

### 4.1 RECORD BIAS AND BIAS TRAP ADJUSTMENT

#### • Connection Diagram

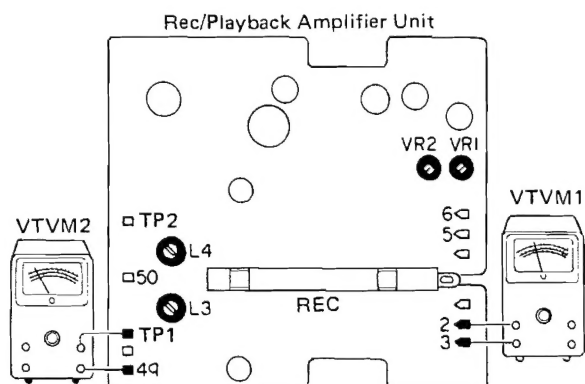


Fig. 11

#### • To Adjust

1. Set the TAPE SELECTOR switch to normal position.
2. Put the tape in recording condition by pushing the RECORD lever.  
Adjust trap coil L3 so that the fluctuation of VTVM2 needle is minimal.
3. Adjust VR1 to keep the fluctuation of VTVM1 at  $400\mu\text{A}$  ( $4.0\text{mV}$ ).
4. Adjust Rch in a similar manner.

- NOTES:
1. Make these adjustments in non-signaling condition.
  2. If the rec/playback frequency characteristic does not meet the standard value, adjust the bias current by the following steps:
    - 2.1 When the frequency is lower than standard, make it  $30\mu\text{A}$  per 1dB lower than  $400\mu\text{A}$  ( $4.0\text{mV}$ ).
    - 2.2 When the frequency is higher than standard, make it  $30\mu\text{A}$  per 1dB higher than  $400\mu\text{A}$  ( $4.0\text{mV}$ ).

### 4.2 TO CHECK RECORD CURRENT

#### • Connection Diagram

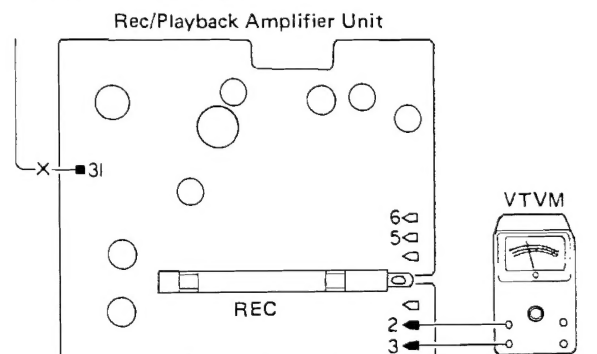


Fig. 12

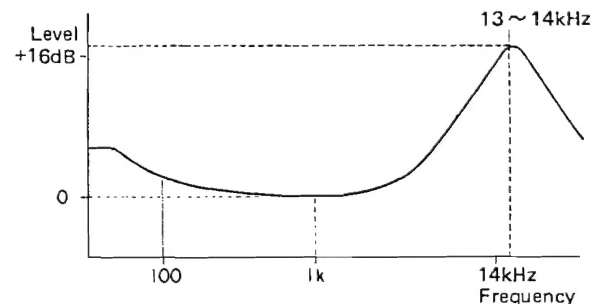


Fig. 13

#### • To Adjust

1. Set the TAPE SELECTOR switch to normal position.
2. Disconnect the lead wire of No. 31 bias current of the rec/playback amplifier unit.
3. Add 1kHz,  $-18\text{dB}$  input signal to the AUX terminal and set the selector switch (S1) at AUX.
4. In recording condition by pressing rec lever, adjust rec level control so that the record level meter indicates 0VU. After the adjustment, VTVM needle indicates  $45\mu\text{A}$  ( $0.45\text{mV}$ ). Next, when the input is adjusted to 14kHz, record current rises to about +16dB. At the rise limit, the record current is 13kHz to 14kHz.

NOTE: Check rec/playback frequency specifications at  $-20\text{VU}$  record level.

## ADJUSTMENT

### 4.3 FM IF ADJUSTMENT

#### • Connection Diagram

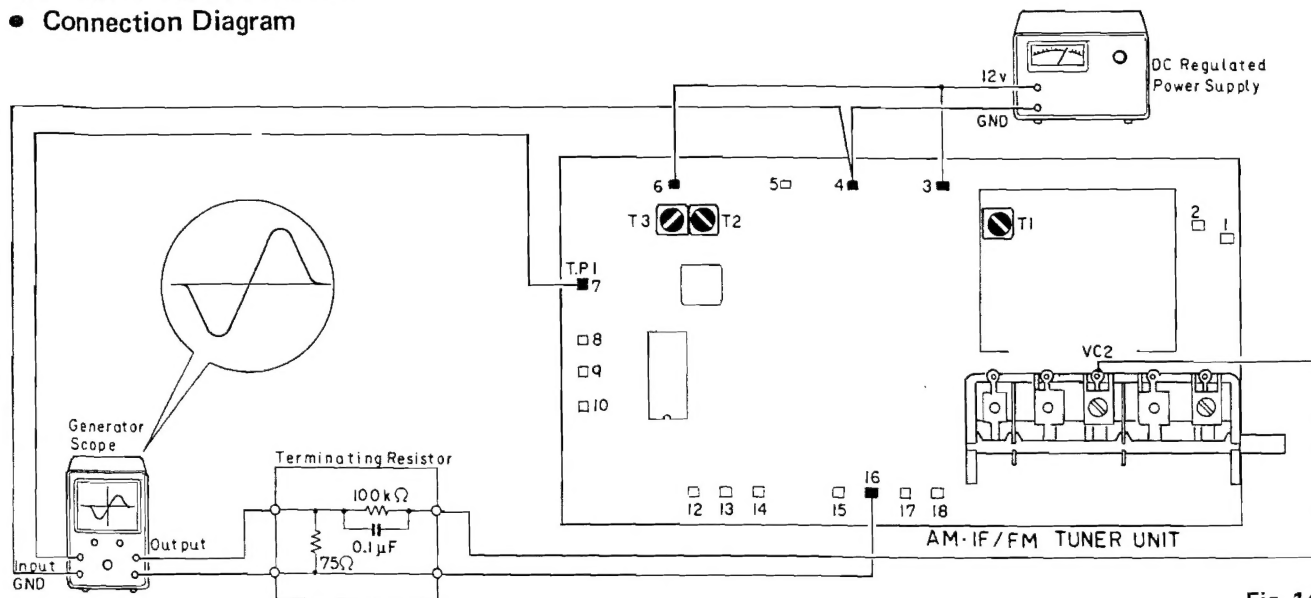


Fig. 14

#### • To Adjust

1. Feed a signal of 40 to 60dB from the generator scope to the RF circuit variable capacitor "hot" side (VC2) or a signal of about 100dB may be applied directly to the antenna terminals.
2. Tune the core (white) of IFT T1 to obtain maximum "S" wave on the generator scope.
3. Adjust the cores of T2 (gray) and T3 (blue) so that maximum amplitude and optimum linearity are obtained.

4. When increasing the generator scope output, check to make sure the waveform, does not collapse. If a significant tendency to collapse is noted, repeat the adjustments of 2 and 3.

NOTE: 1. If other waves appear, in addition to the S curve, adjust the variable capacitor slightly to remove spurious traces.

2. It is not essential to match the 10.7MHz marker to the S curve center point.

### 4.4 FM TRACKING ADJUSTMENT

#### • Connection Diagram

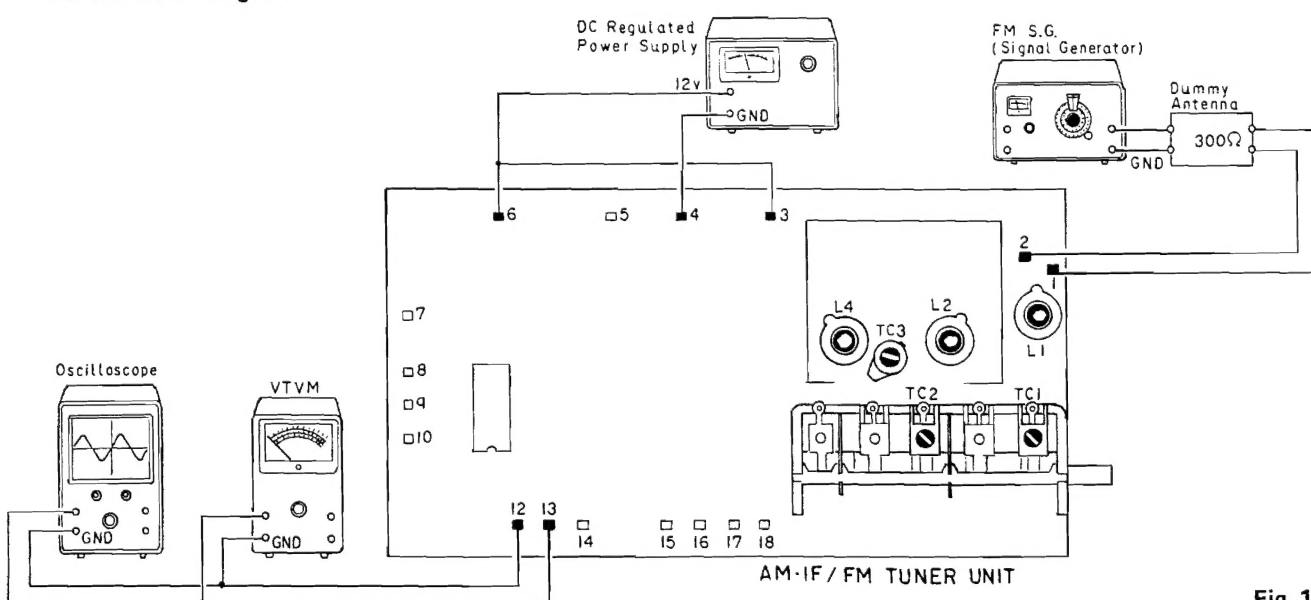


Fig. 15

### • To Adjust

1. Set the variable capacitor to maximum capacity position and set the signal generator at 87MHz, 30% modulation at 400Hz, with a signal level of 20 to 40 dB.
2. Adjust L4 to obtain maximum low frequency output from the tuner.
3. Set the variable capacitor to minimum capacity position, and apply a 109MHz signal from the signal generator. Tune TC3 for maximum high frequency tuner output.
4. Repeat procedures 1 through 3 to establish the band width of 87 to 109MHz.
5. Set signal generator frequency at 90MHz and tune the variable capacitor for maximum reception. Peak the output by adjustment of L1 and L2.
6. Set signal generator frequency at 106MHz and tune to the signal with the variable capacitor. Peak the output by adjustment of TC1 and TC2.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
87MHz	Maximum capacity	L4	OSC
109MHz	Minimum capacity	TC3	OSC
90MHz	Tuned position	L1 L2	ANT RF
106MHz	Tuned position	TC1 TC2	ANT RF

## 4.5 FM MPX ADJUSTMENT

### • Connection Diagram

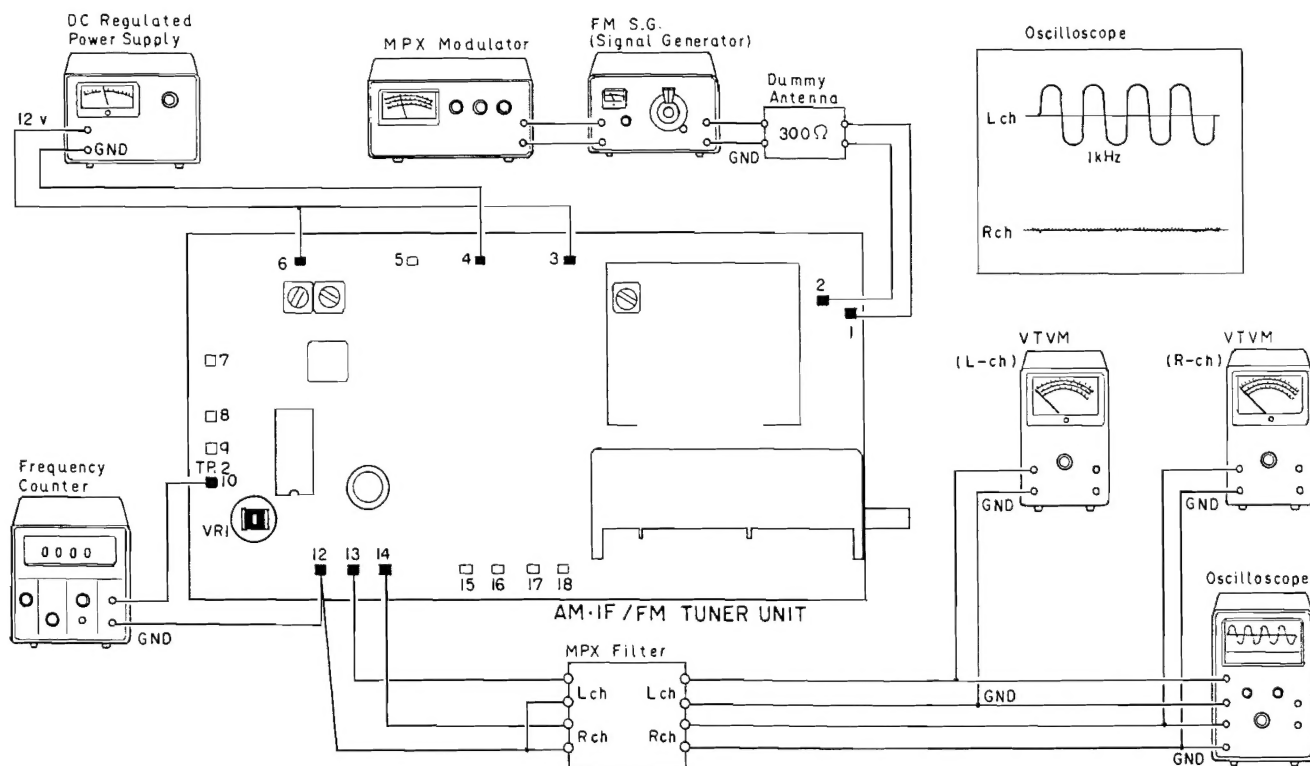


Fig. 16

## ADJUSTMENT

### • To Adjust

1. Apply a 98MHz non-modulation signal with an output level of 60dB from the signal generator to adjust VR1 so that the frequency counter indicates  $19\text{kHz} \pm 20\text{Hz}$ .
2. Select signal generator modulation as follows:  
 Modulation frequency  
     1kHz  
 Percentage of modulation  
     Pilot 10% (7.5kHz Dev.)  
     Main 100% (6.75kHz Dev.)

3. Tune to a 98MHz signal.
4. Set the signal generator level to 60dB and select L-side modulation. Make sure separation is optimum (R-side output at minimum). Similarly ascertain L-side output.

NOTE: Alignment can be made without an MPX filter, however, adjustment will be difficult owing to the effects of the 19kHz and 38kHz carrier leak.

## 4.6 AM (MW AND LW) IF ADJUSTMENT

### • Connection Diagram

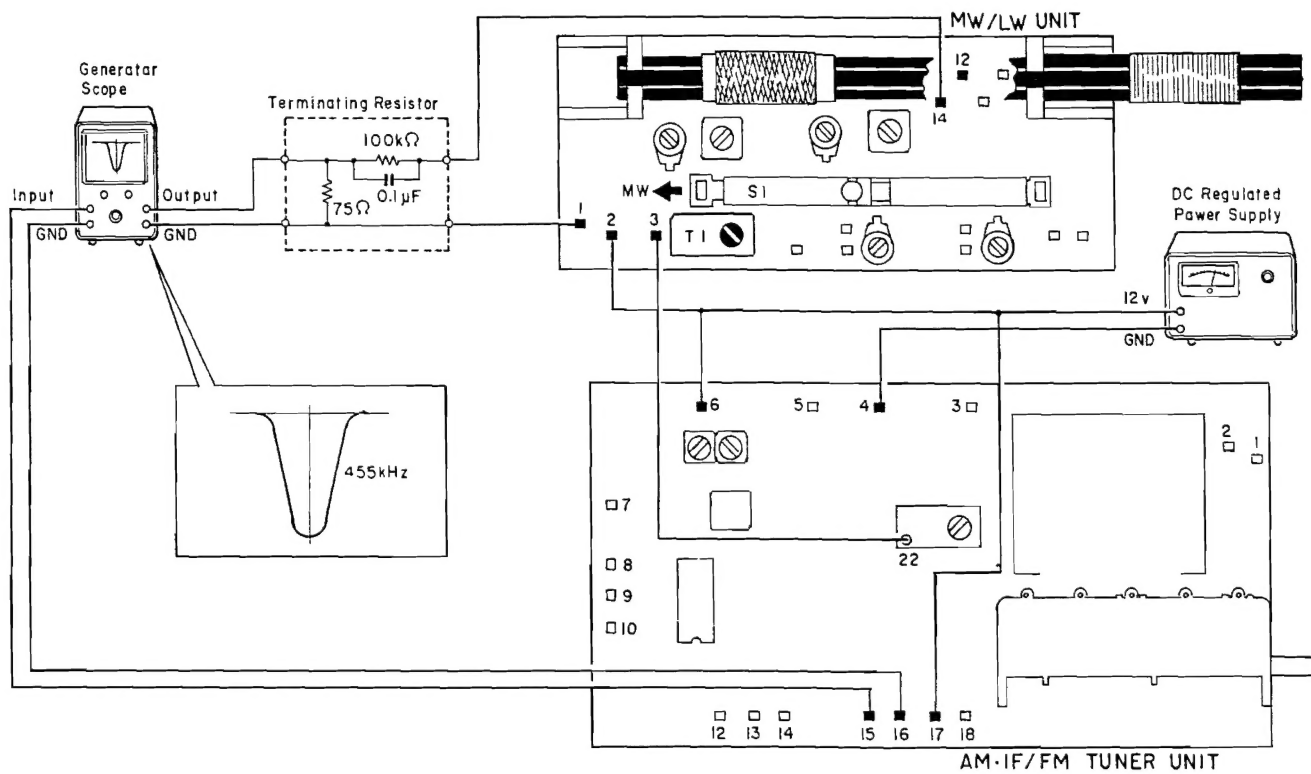


Fig. 17

### • To Adjust

1. Apply a 455kHz signal with an output level of 40~60dB from the generator scope to adjust T1 so that maximum amplitude and symmetrical waveform are obtained on the generator scope.



## 4.7 MW TRACKING ADJUSTMENT

## • Connection Diagram

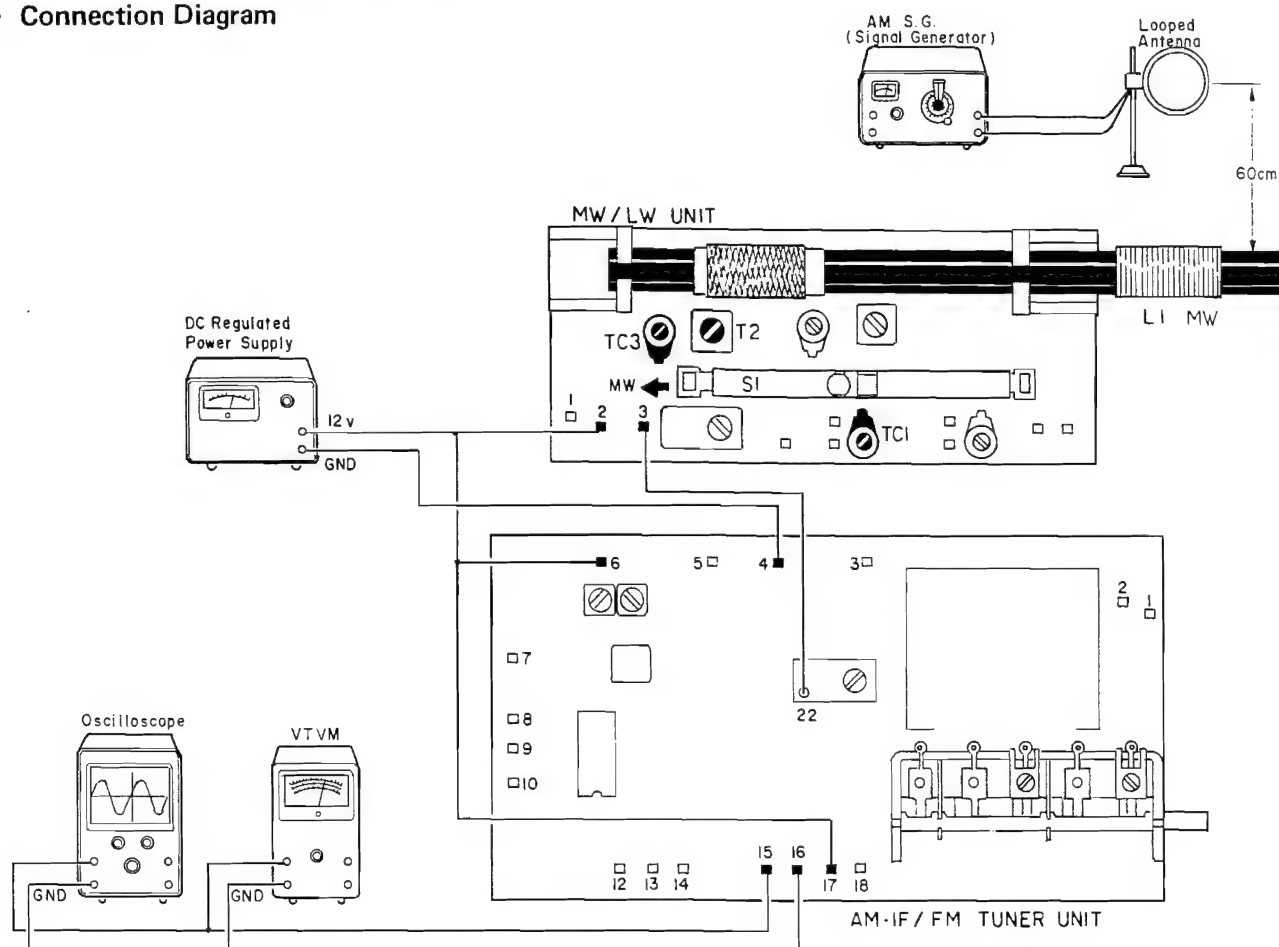


Fig. 18

## • To Adjust

1. Select the MW/LW selector switch to MW position.
2. Set the variable capacitor at maximum capacity and apply a 510kHz signal from the signal generator (30% modulation at 400Hz). Adjust the oscillator coil T2 for maximum tuner output.
3. Set the variable capacitor at minimum capacitance and apply a signal of 1,650kHz. Adjust trimmer capacitor TC3 for maximum tuner output.
4. Repeat procedures 2 and 3 to establish the band width of 510 to 1,650kHz.
5. Apply a signal of 600kHz and tune the variable capacitor for maximum reception; peak the output by adjusting the position of the bar antenna coil.
6. Apply a signal of 1,400kHz and tune the variable capacitor for maximum reception; peak the output by adjustment of the trimmer capacitor TC1.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
510kHz	Maximum capacity	T2	OSC
1,650kHz	Minimum capacity	TC3	OSC
600kHz	Tuned position	Bar antenna	ANT
1,400kHz	Tuned position	TC1	ANT

4.8 LW TRACKING ADJUSTMENT

• Connection Diagram

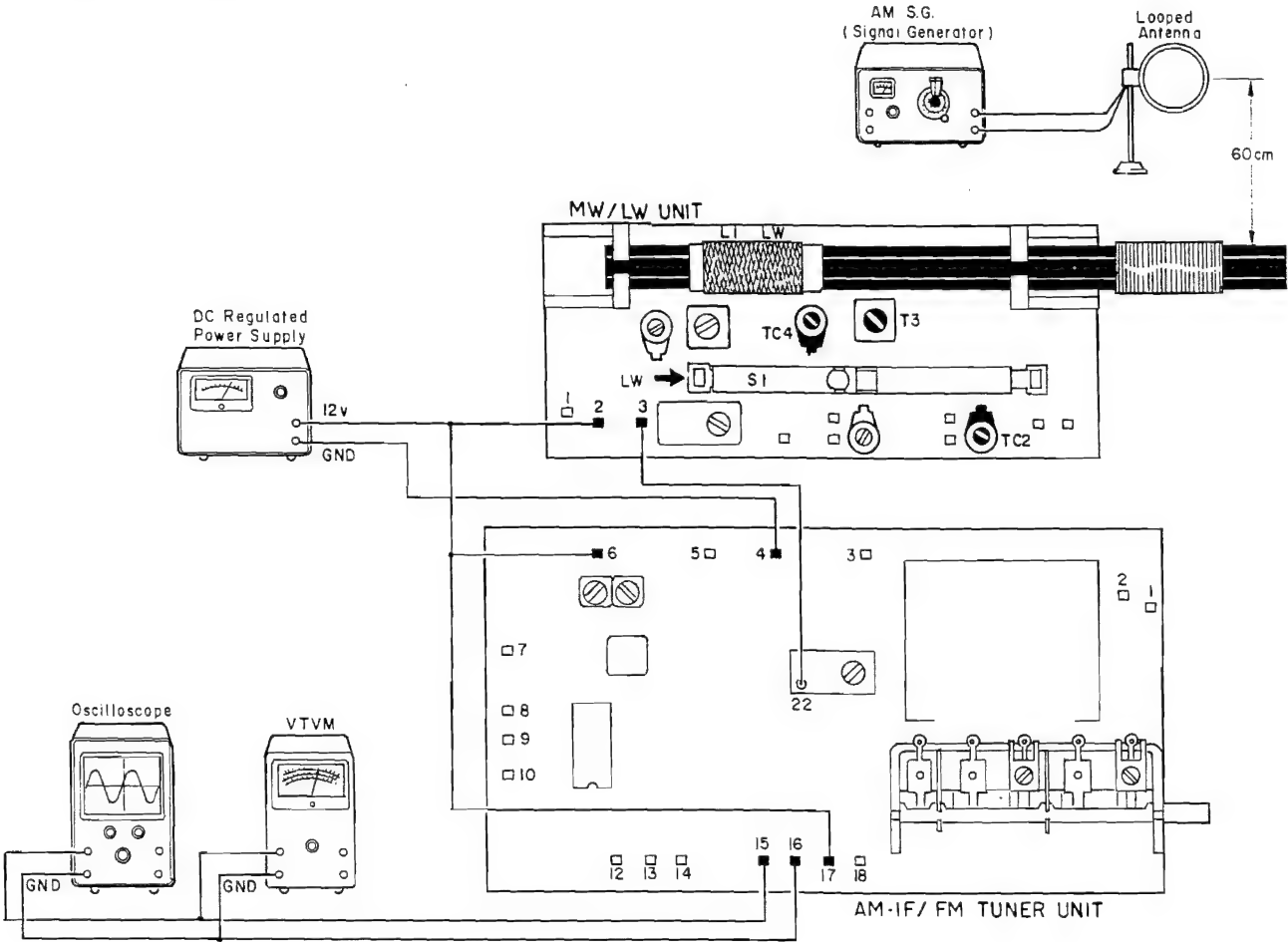


Fig. 19

• To Adjust

1. Select the MW/LW selector switch to LW position.
2. Set the variable capacitor at maximum capacity and apply a 140kHz signal from the signal generator (30% modulation at 400Hz). Adjust the oscillator coil T3 for maximum tuner output.
3. Set the variable capacitor at minimum capacitance and apply a signal of 370kHz. Adjust trimmer capacitor TC4 for maximum tuner output.
4. Repeat procedures 2 and 3 to establish the band width of 140 to 370kHz.
5. Apply a signal of 160kHz and tune the variable capacitor for maximum reception; peak the output by adjusting the position of the bar antenna coil.
6. Apply a signal of 340kHz and tune the variable capacitor for maximum reception; peak the output by adjustment of the trimmer capacitor TC3.
7. Repeat procedures 5 and 6 for optimum tracking at both ends.

S.G. frequency	Variable capacitor position	Adjustment point	Circuit section
140kHz	Maximum capacity	T3	OSC
370kHz	Minimum capacity	TC4	OSC
160kHz	Tuned position	LW Bar antenna	ANT
340kHz	Tuned position	TC3	ANT

#### 4.9 DRIVE CAM UNIT ADJUSTMENT

As shown in Fig. 20, adjust the drive cam unit so the center of its nontoothed part intersects the line from the center shaft to the drive cam center. Adjust by turning the hex nut a little at a time.

NOTE: It is not necessary to loosen the screw in the center of the hex nut.

#### 4.10 SIGNAL BAR ADJUSTMENT

Adjust when the tonearm auto-return does not operate or the tonearm return is too rapid. Adjust so the signal bar begins to push plate 1 when the tonearm is at a point 64 mm from the center shaft.

Turn the screw in the (↖) direction when plate 1 is pushed too soon. Turn the screw in the (↗) direction when plate 1 is pushed too late.

#### 4.11 SWITCH CAM ADJUSTMENT

Adjust so the turntable starts to rotate when the tonearm is near the outer edge of the turntable.

If the following incorrect movements (items A, B, C, D) are found, move the switch cam in the arrow-indicated direction such as to A↗, B↖, C↘, and D↙, according to the respective item to be adjusted.

A↗: When the tonearm is operating and the switch cam and switch lever are not contacting.

B↖: When the tonearm is too far from the right position toward the center when the turntable starts rotating.

C↘: When the tonearm is too far from the right position toward the outside edge when the turntable starts rotating.

D↙: When the switch cam and switch lever are contacting but the arm movement is not smooth.

Try to move the switch cam in various ways to find out right position if there are two more incorrect movements.

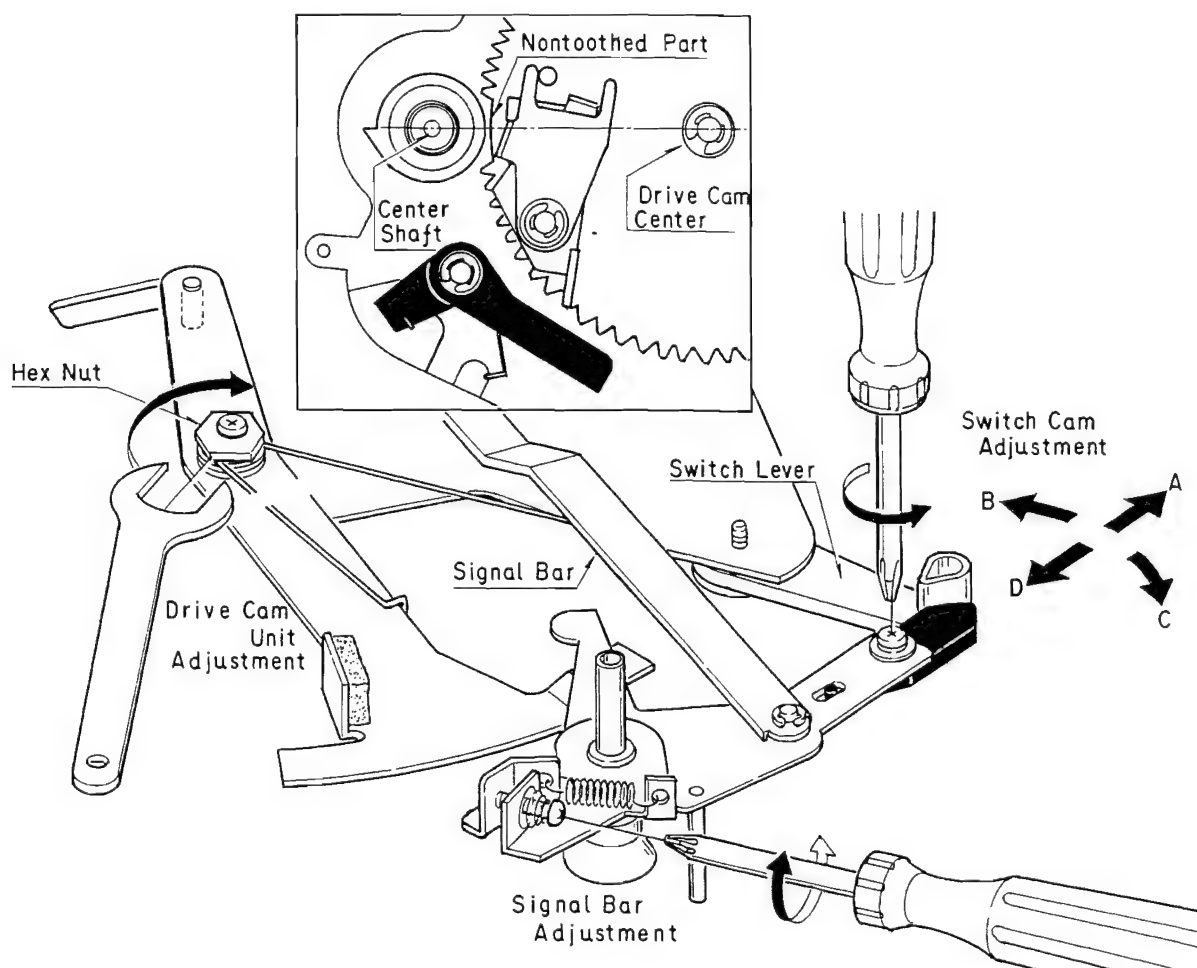


Fig. 20

## 5. DIAL STRINGING

NOTICE: Before dial string, set the tuning shaft fully counter-clockwise (low frequency).

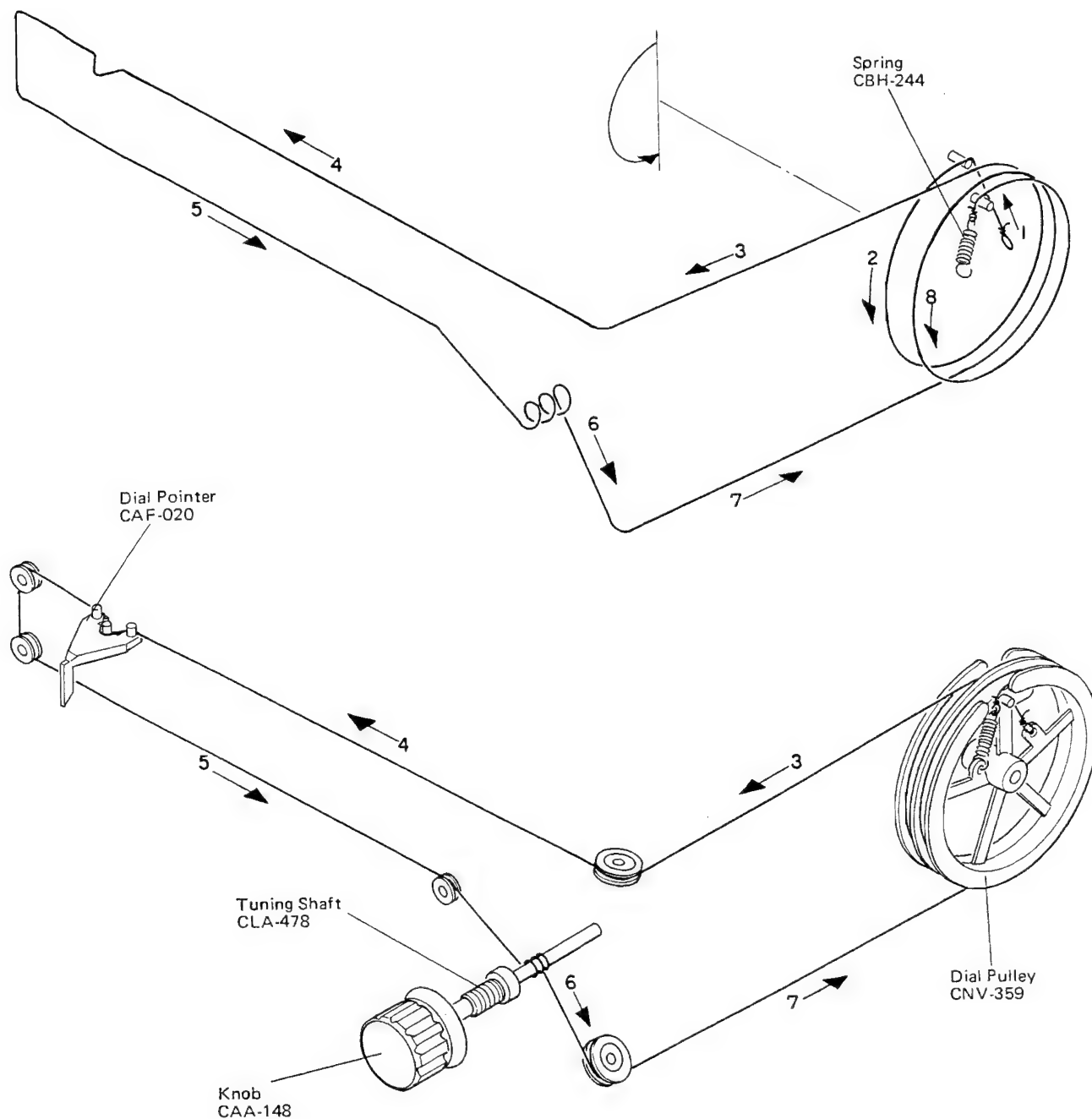


Fig. 21

## 6. SCHEMATIC CIRCUIT DIAGRAM

KH-3500

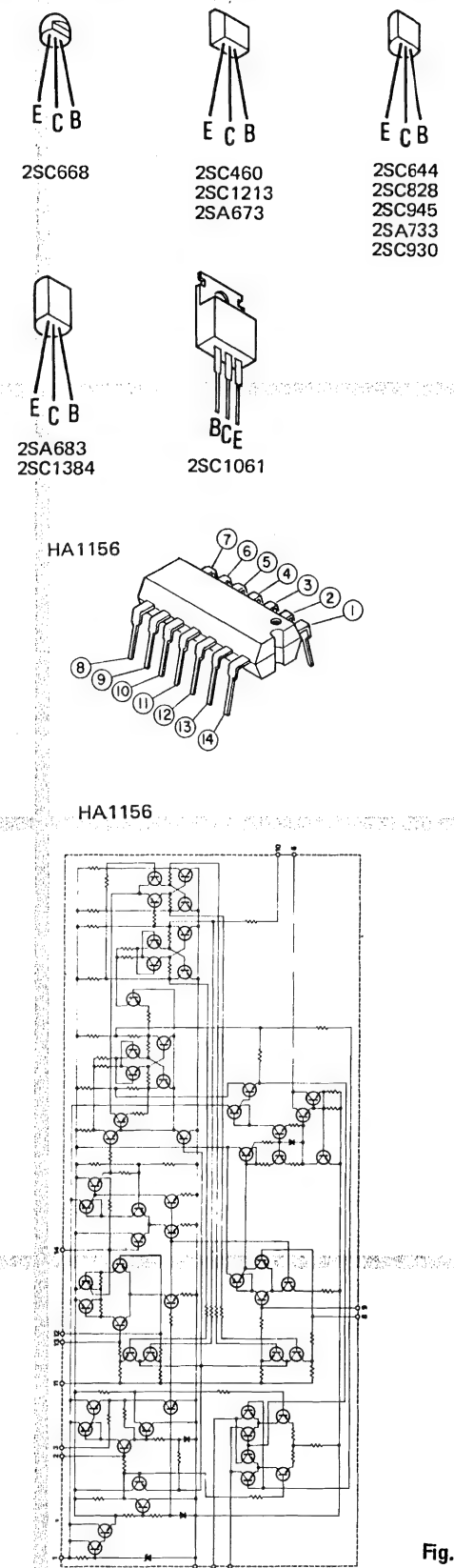
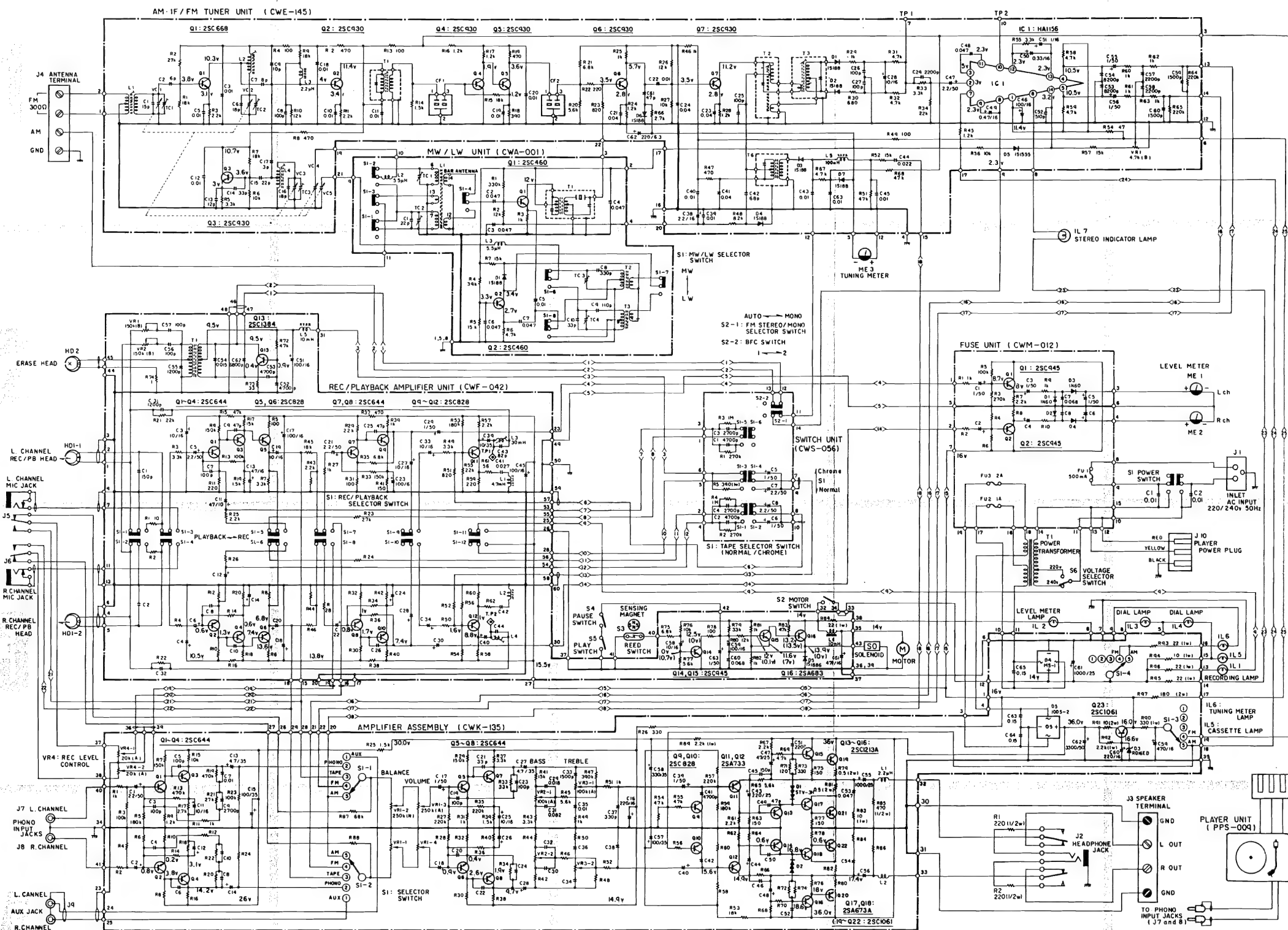
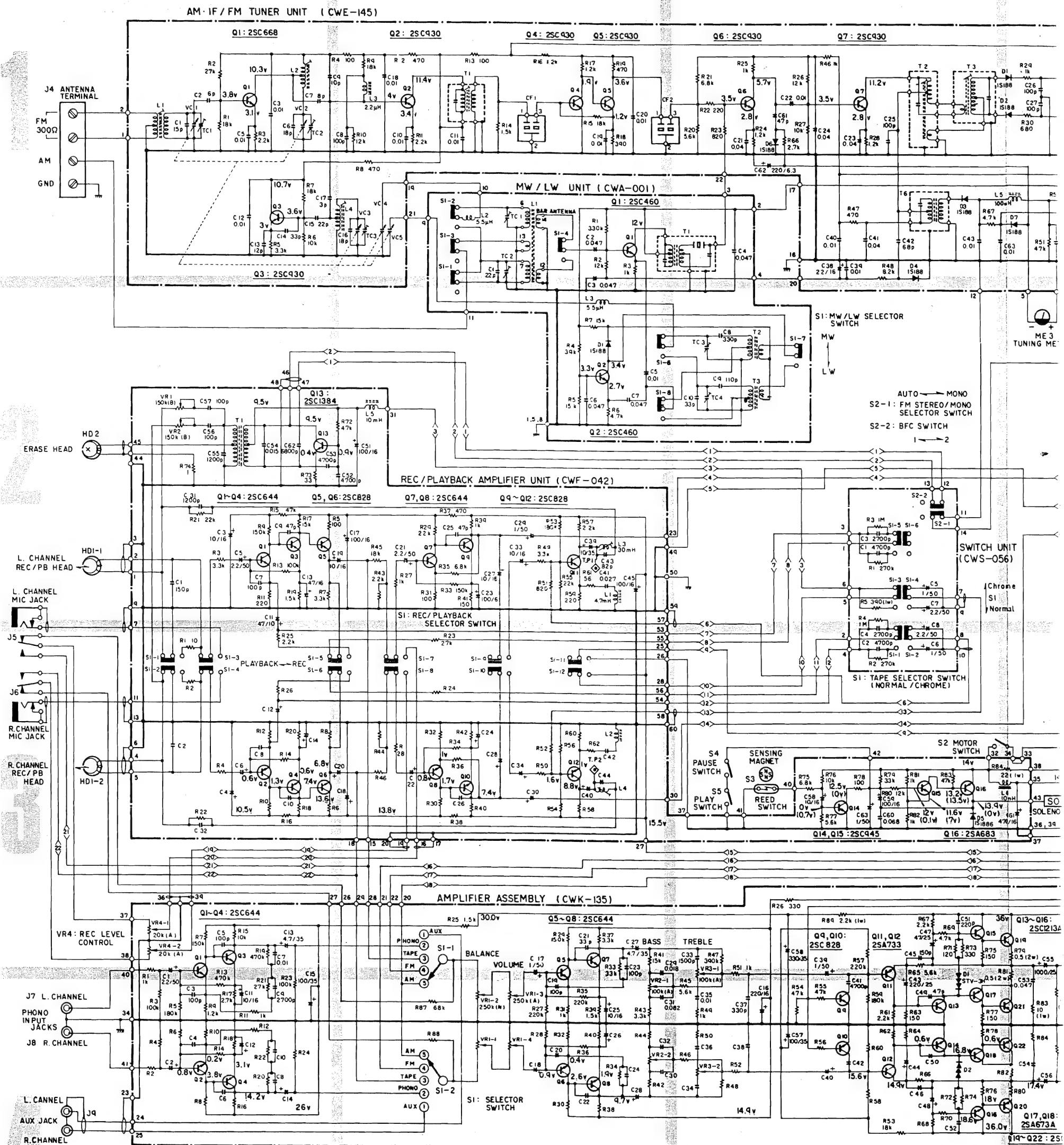


Fig. 22

# 6. SCHEMATIC CIRCUIT DIAGRAM





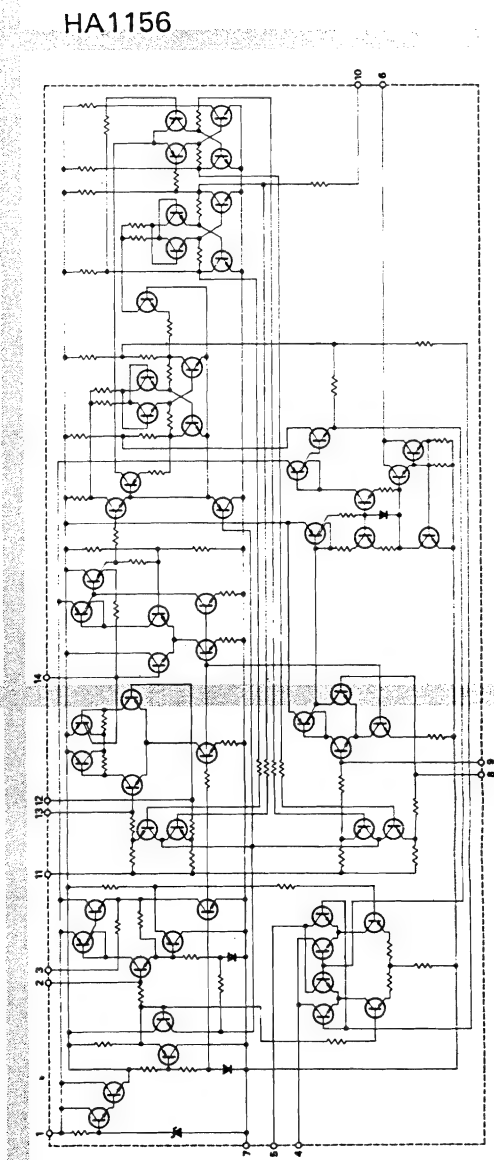
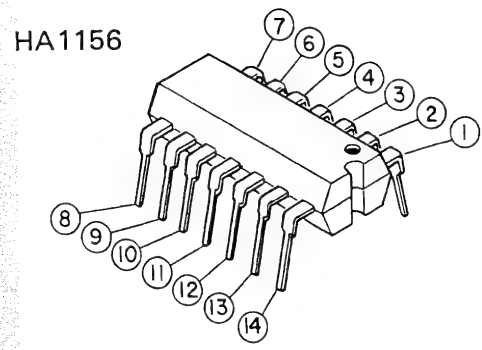
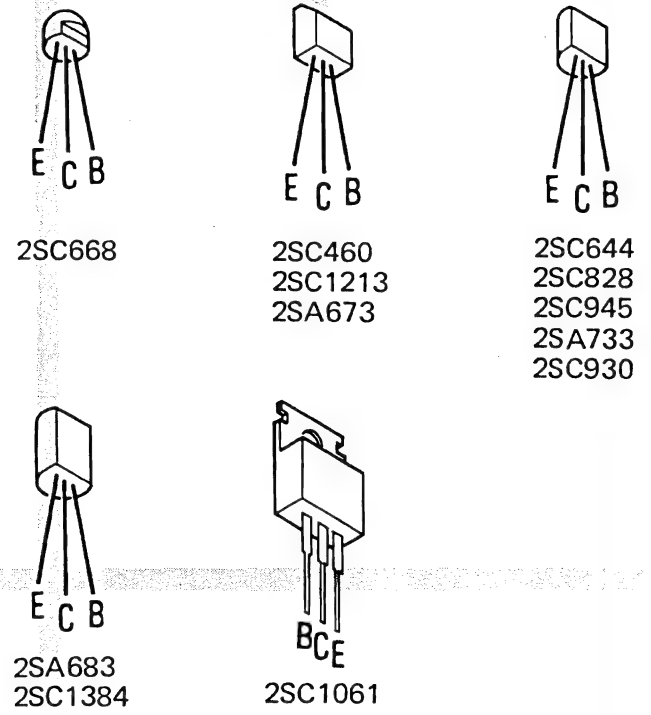
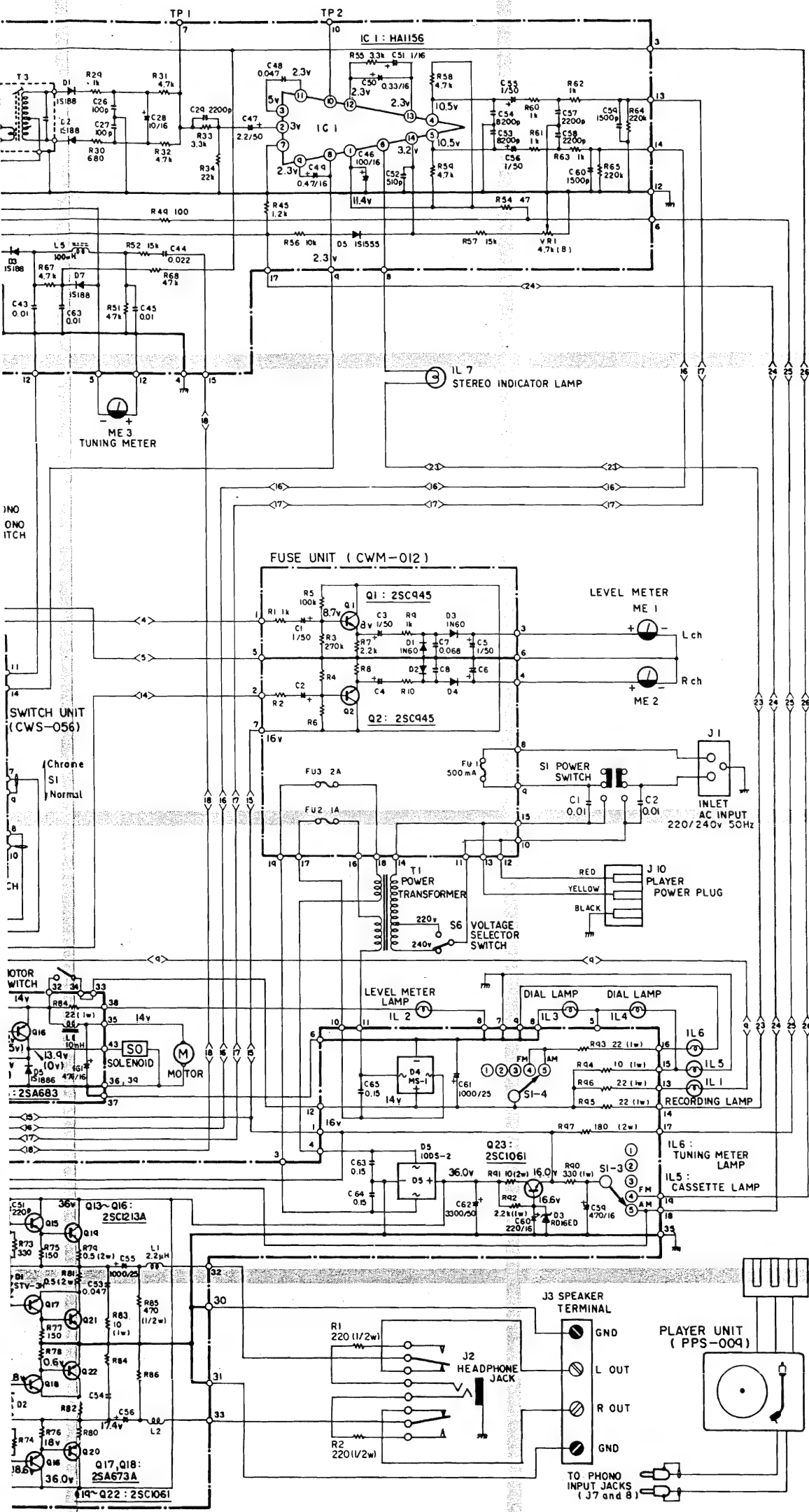


Fig. 22



# 7. REC/PB AMP UNIT (CWF-042) KH-3500

REC/PB AMP UNIT (CWF-042)

## Parts Connection

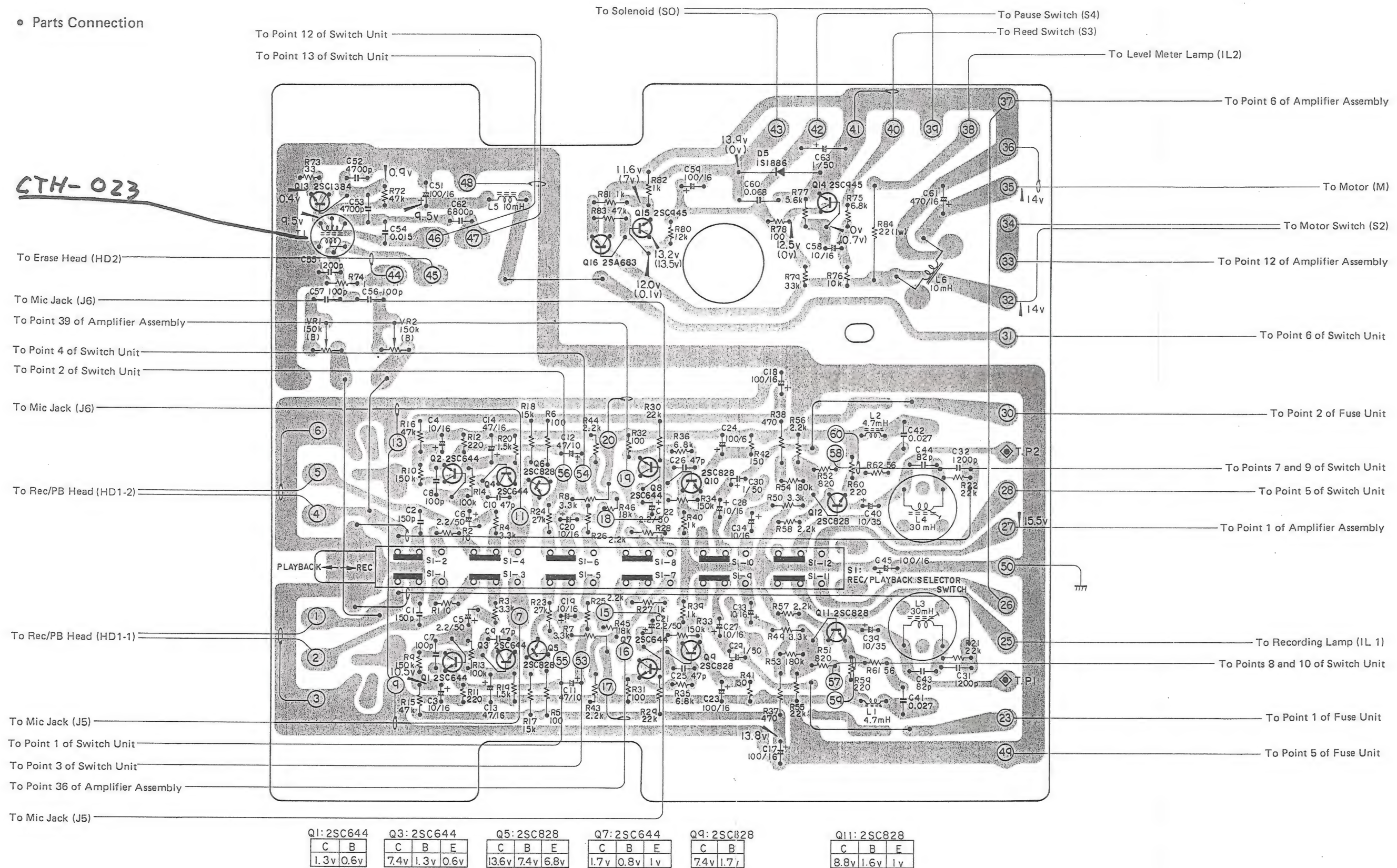


Fig. 23

## ● Parts List

NOTICE: Of the descriptive symbols of the resistor and capacitor, the encircled alphabetic letter denotes the allowable error.

Example: RD1/4VS100 (J) C:  $\pm 0.25\mu\text{F}$  F:  $\pm 1\mu\text{F}$  J:  $\pm 5\%$  M:  $\pm 20\%$  Z:  $\begin{matrix} +80\% \\ -20\% \end{matrix}$   
CEA100 (P) 25 D:  $\pm 0.5\mu\text{F}$  G:  $\pm 2\%$  K:  $\pm 10\%$  X:  $\begin{matrix} +40\% \\ -20\% \end{matrix}$  P:  $\begin{matrix} +100\% \\ -10\% \end{matrix}$

## MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-035-D, E	Transistor, 2SC644-R, S	
Q2	G05-035-D, E	Transistor, 2SC644-R, S	
Q3	G05-035-D, E	Transistor, 2SC644-R, S	
Q4	G05-035-D, E	Transistor, 2SC644-R, S	
Q5	G05-061-D, E	Transistor, 2SC828-R, S	
Q6	G05-061-D, E	Transistor, 2SC828-R, S	
Q7	G05-035-D, E	Transistor, 2SC644-R, S	
Q8	G05-035-D, E	Transistor, 2SC644-R, S	
Q9	G05-061-D, E	Transistor, 2SC828-R, S	
Q10	G05-061-D, E	Transistor, 2SC828-R, S	
Q11	G05-061-D, E	Transistor, 2SC828-R, S	
Q12	G05-061-D, E	Transistor, 2SC828-R, S	
Q13	G05-418-C, D	Transistor, 2SC1384-R, S	
Q14	G05-044-B, C	Transistor, 2SC945-Q, R	
Q15	G05-044-B, C	Transistor, 2SC945-Q, R	
Q16	G03-404-C D	Transistor, 2SA683-R, S	
S1	CSH-029	Switch	
L1	CTF-049	Coil, 4.7mH	
L2	CTF-049	Coil, 4.7mH	
L3	CTH014	Coil, 30mH	
L4	CTH-014	Coil, 30mH	
L5	CTF-029	Ferri-inductor, 10mH	
L6	CTH-015	Coil, 10mH	
VR1	CCP-024	Volume	
VR2	CCP-024	Volume	
D5	G00-551-A	Diode, 1S1886	

T1 CTH-023 Trap Coil





## CAPACITORS

Ref. Key	Parts No.	Description	Ref. Key	Parts No.	Description
C1	CKDYB151K50	Capacitor 150pF 50V	C28	CEA100P16	Capacitor 10μF 16V
C2	CKDYB151K50	Capacitor 150pF 50V	C29	CEA010P50	Capacitor 1μF 50V
C3	CEA100P16	Capacitor 10μF 16V	C30	CEA010P50	Capacitor 1μF 50V
C4	CEA100P16	Capacitor 10μF 16V	C31	CQMA122K50	Capacitor 1200pF 50V
C5	CEA2R2P50	Capacitor 2.2μF 50V	C32	CQMA122K50	Capacitor 1200pF 50V
C6	CEA2R2P50	Capacitor 2.2μF 50V	C33	CEA100P16	Capacitor 10μF 16V
C7	CKDYB101K50	Capacitor 100pF 50V	C34	CEA100P16	Capacitor 10μF 16V
C8	CKDYB101K50	Capacitor 100pF 50V	C39	CEA100P35	Capacitor 10μF 35V
C9	CCDSL470K50	Capacitor 47pF 50V	C40	CEA100P35	Capacitor 10μF 35V
C10	CCDSL470K50	Capacitor 47pF 50V	C41	CQMA273K50	Capacitor 0.027μF 50V
C11	CEA470P10	Capacitor 47μF 10V	C42	CQMA273K50	Capacitor 0.027μF 50V
C12	CEA470P10	Capacitor 47μF 10V	C43	CCDSL820K50	Capacitor 82pF 50V
C13	CEA470P16	Capacitor 47μF 16V	C44	CCDSL820K50	Capacitor 82pF 50V
C14	CEA470P16	Capacitor 47μF 16V	C45	CEA101P16	Capacitor 100μF 16V
C17	CEA101P16	Capacitor 100μF 16V	C51	CEA101P16	Capacitor 100μF 16V
C18	CEA101P16	Capacitor 100μF 16V	C52	CQMA472K50	Capacitor 4700pF 50V
C19	CEA100P16	Capacitor 10μF 16V	C53	CQMA472K50	Capacitor 4700pF 50V
C20	CEA100P16	Capacitor 10μF 16V	C54	CQMA153K50	Capacitor 0.015μF 50V
C21	CEA2R2P50	Capacitor 2.2μF 50V	C55	CQSA122K50	Capacitor 1200pF 50V
C22	CEA2R2P50	Capacitor 2.2μF 50V	C56	CKDYB101K50	Capacitor 100pF 50V
C23	CEA101P6	Capacitor 100μF 6V	C57	CKDYB101K50	Capacitor 100pF 50V
C24	CEA101P6	Capacitor 100μF 6V	C58	CEA100P16	Capacitor 10μF 16V
C25	CCDSL470K50	Capacitor 47pF 50V	C59	CEA101P16	Capacitor 100μF 16V
C26	CCDSL470K50	Capacitor 47pF 50V	C60	CQMA683K50	Capacitor 0.068μF 50V
C27	CEA100P16	Capacitor 10μF 16V	C61	CEA471P16	Capacitor 470μF 16V
			C62	CQMA682K50	Capacitor 6800pF 50V
			C63	CEA010P50	Capacitor 1μF 50V

## 8. SWITCH UNIT (CWS-056)

KH-3500

## • Parts Connection

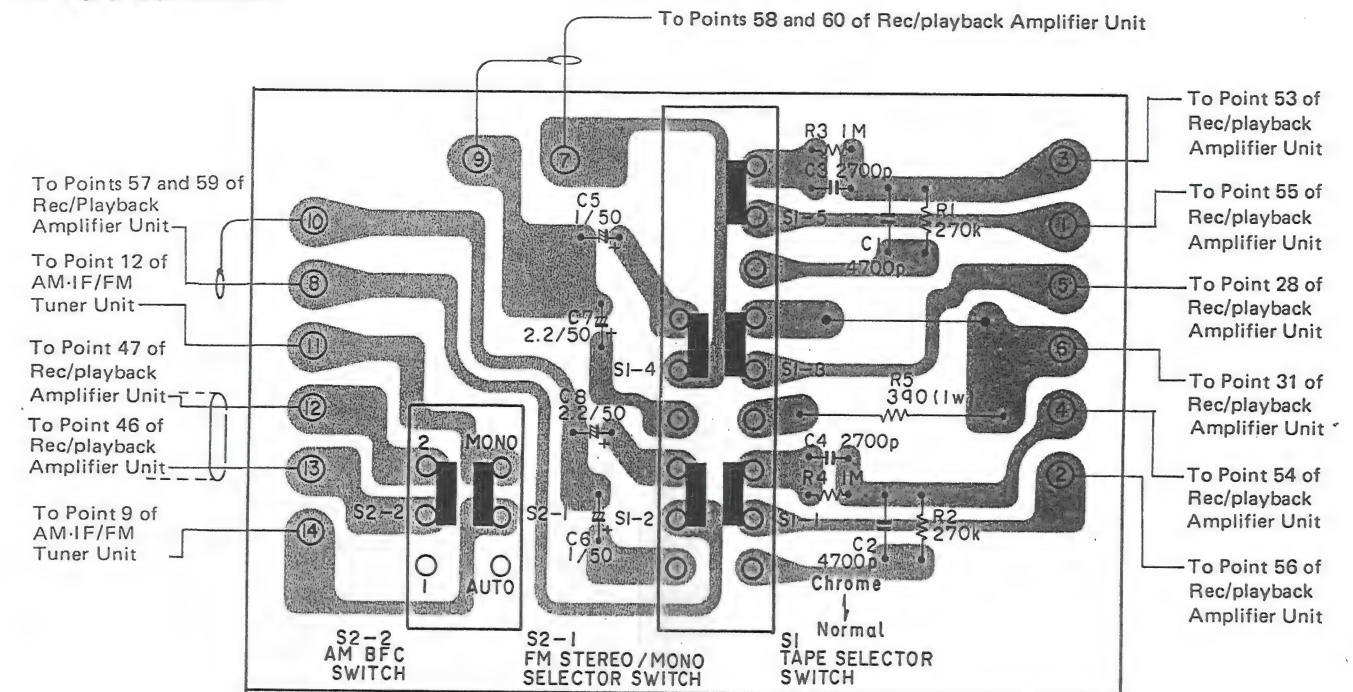


Fig. 24

## • Parts List

Ref. Key	Parts No.	Description	Notes
S1	CSG-063	Push Switch	Tape Selector
S2	CSG-063	Push Switch	ST/Mono, AM BFC
R1	RD1/4VS274J	Resistor, 270kΩ ¼W	
R2	RD1/4VS274J	Resistor, 270kΩ ¼W	
R3	RD1/4VS105J	Resistor, 1MΩ ¼W	
R4	RD1/4VS105J	Resistor, 1MΩ ¼W	
R5	RS1P391K	Resistor, 390Ω 1W	
C1	CQMA472K50	Capacitor, 4700pF 50V	
C2	CQMA472K50	Capacitor, 4700pF 50V	
C3	CQMA272K50	Capacitor, 2700pF 50V	
C4	CQMA272K50	Capacitor, 2700pF 50V	
C5	CEA010P50	Capacitor, 1μF 50V	
C6	CEA010P50	Capacitor, 1μF 50V	
C7	CEA2R2P50	Capacitor, 2.2μF 50V	
C8	CEA2R2P50	Capacitor, 2.2μF 50V	



# 9. AMPLIFIER ASSEMBLY (CWK-135) KH-3500

## AMPLIFIER ASSEMBLY (CWK-135)

### • Parts Connection

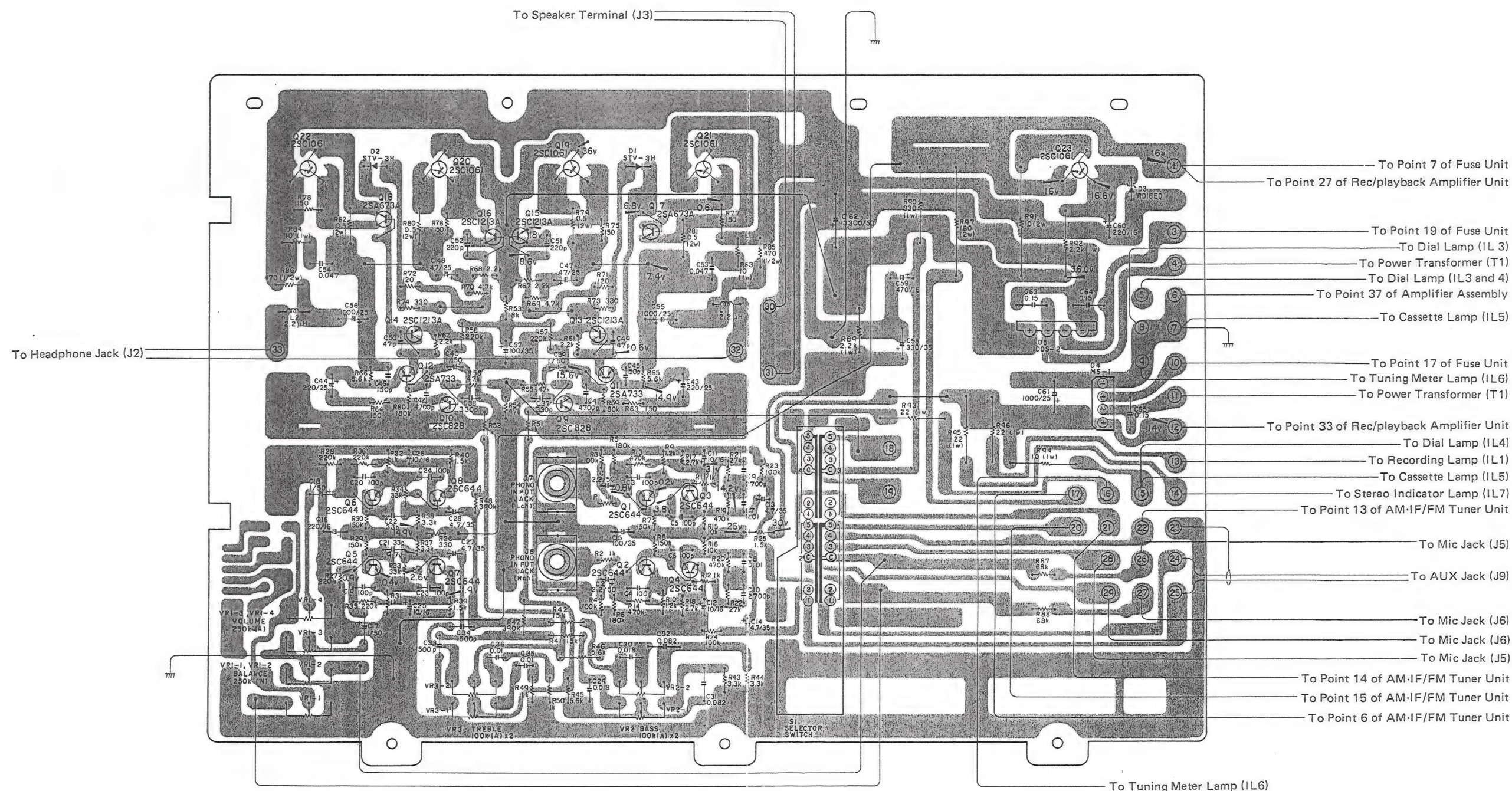


Fig. 25



# AMPLIFIER ASSEMBLY (CWK-135) KH-3500

## ● Parts List

### MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-035-D, E	Transistor, 2SC644-R, S	
Q2	G05-035-D, E	Transistor, 2SC644-R, S	
Q3	G05-035-D, E	Transistor, 2SC644-R, S	
Q4	G05-035-D, E	Transistor, 2SC644-R, S	
Q5	G05-035-D, E	Transistor, 2SC644-R, S	
Q6	G05-035-D, E	Transistor, 2SC644-R, S	
Q7	G05-035-D, E	Transistor, 2SC644-R, S	
Q8	G05-035-D, E	Transistor, 2SC644-R, S	
Q9	G05-061-C, D	Transistor, 2SC828-Q, R	
Q10	G05-061-C, D	Transistor, 2SC828-Q, R	
Q11	G03-017-B, C	Transistor, 2SA733-Q, R	
Q12	G03-017-B, C	Transistor, 2SA733-Q, R	
Q13	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q14	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q15	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q16	G05-056-B, C	Transistor, 2SC1213A-B, C	
Q17	G03-016-B, C	Transistor, 2SA673A-B, C	
Q18	G03-016-B, C	Transistor, 2SA673A-B, C	
Q19	G05-704-B, C	Transistor, 2SC1061-B, C	
Q20	G05-704-B, C	Transistor, 2SC1061-B, C	
Q21	G05-704-B, C	Transistor, 2SC1061-B, C	
Q22	G05-704-B, C	Transistor, 2SC1061-B, C	
Q23	G05-704-B, C	Transistor, 2SC1061-B, C	
D1	G01-216-B, C	Diode, STV-3H-Y, G	
D2	G01-216-B, C	Diode, STV-3H-Y, G	
D3	G01-049-C	Diode, RD16ED	
D4	G01-806-A	Diode, MS-1	
D5	G00-557-B	Diode, 10DS-2	
L1	CTF-050	Choke Coil, 2.2μH	
L2	CTF-050	Choke Coil, 2.2μH	
S1	CSD-006	Switch	Selector
VR1	CCS-120	Volume	Balance, Volume
VR2	CCS-093	Volume	Bass
VR3	CCS-093	Volume	Treble
VR4	CCS-119	Volume	Rec Level

# AMPLIFIER ASSEMBLY (CWK-135)

## RESISTORS

Ref. Key	Parts No.	Description			Ref. Key	Parts No.	Description		
R1	RD¼VS102J	Resistor	1kΩ	¼W	R41	RD¼VS153J	Resistor	15kΩ	¼W
R2	RD¼VS102J	Resistor	1kΩ	¼W	R42	RD¼VS153J	Resistor	15kΩ	¼W
R3	RD¼VS104J	Resistor	100kΩ	¼W	R43	RD¼VS332J	Resistor	3.3kΩ	¼W
R4	RD¼VS104J	Resistor	100kΩ	¼W	R44	RD¼VS332J	Resistor	3.3kΩ	¼W
R5	RD¼VS184J	Resistor	180kΩ	¼W	R45	RD¼VS562J	Resistor	5.6kΩ	¼W
R6	RD¼VS184J	Resistor	180kΩ	¼W	R46	RD¼VS562J	Resistor	5.6kΩ	¼W
R7	RD¼VS154J	Resistor	150kΩ	¼W	R47	RD¼VS394J	Resistor	390kΩ	¼W
R8	RD¼VS154J	Resistor	150kΩ	¼W	R48	RD¼VS394J	Resistor	390kΩ	¼W
R9	RD¼VS122J	Resistor	1.2kΩ	¼W	R49	RD¼VS102J	Resistor	1kΩ	¼W
R10	RD¼VS122J	Resistor	1.2kΩ	¼W	R50	RD¼VS102J	Resistor	1kΩ	¼W
R11	RD¼VS102J	Resistor	1kΩ	¼W	R51	RD¼VS102J	Resistor	1kΩ	¼W
R12	RD¼VS102J	Resistor	1kΩ	¼W	R52	RD¼VS102J	Resistor	1kΩ	¼W
R13	RD¼VS474J	Resistor	470kΩ	¼W	R53	RD¼VS183J	Resistor	18kΩ	¼W
R14	RD¼VS474J	Resistor	470kΩ	¼W	R54	RD¼VS473J	Resistor	47kΩ	¼W
R15	RD¼VS103J	Resistor	10kΩ	¼W	R55	RD¼VS473J	Resistor	47kΩ	¼W
R16	RD¼VS103J	Resistor	10kΩ	¼W	R56	RD¼VS473J	Resistor	47kΩ	¼W
R17	RD¼VS272J	Resistor	2.7kΩ	¼W	R57	RD¼VS224J	Resistor	220kΩ	¼W
R18	RD¼VS272J	Resistor	2.7kΩ	¼W	R58	RD¼VS224J	Resistor	220kΩ	¼W
R19	RD¼VS474J	Resistor	470kΩ	¼W	R59	RD¼VS184J	Resistor	180kΩ	¼W
R20	RD¼VS474J	Resistor	470kΩ	¼W	R60	RD¼VS184J	Resistor	184kΩ	¼W
R21	RD¼VS273J	Resistor	27kΩ	¼W	R61	RD¼VS222J	Resistor	2.2kΩ	¼W
R22	RD¼VS273J	Resistor	27kΩ	¼W	R62	RD¼VS222J	Resistor	2.2kΩ	¼W
R23	RD¼VS104J	Resistor	100kΩ	¼W	R63	RD¼VS151J	Resistor	150Ω	¼W
R24	RD¼VS104J	Resistor	100kΩ	¼W	R64	RD¼VS151J	Resistor	150Ω	¼W
R25	RD¼VS152J	Resistor	1.5kΩ	¼W	R65	RD¼VS562J	Resistor	5.6kΩ	¼W
R26	RD¼VS331J	Resistor	330Ω	¼W	R66	RD¼VS562J	Resistor	5.6kΩ	¼W
R27	RD¼VS224J	Resistor	220kΩ	¼W	R67	RD¼VS222J	Resistor	2.2kΩ	¼W
R28	RD¼VS224J	Resistor	220kΩ	¼W	R68	RD¼VS222J	Resistor	2.2kΩ	¼W
R29	RD¼VS154J	Resistor	150kΩ	¼W	R69	RD¼VS472J	Resistor	4.7kΩ	¼W
R30	RD¼VS154J	Resistor	150kΩ	¼W	R70	RD¼VS472J	Resistor	4.7kΩ	¼W
R31	RD¼VS102J	Resistor	1kΩ	¼W	R71	RD¼VS121J	Resistor	120Ω	¼W
R32	RD¼VS102J	Resistor	1kΩ	¼W	R72	RD¼VS121J	Resistor	120Ω	¼W
R33	RD¼VS333J	Resistor	33kΩ	¼W	R73	RD¼VS331J	Resistor	330Ω	¼W
R34	RD¼VS333J	Resistor	33kΩ	¼W	R74	RD¼VS331J	Resistor	330Ω	¼W
R35	RD¼VS224J	Resistor	220kΩ	¼W	R75	RD¼VS151J	Resistor	150Ω	¼W
R36	RD¼VS224J	Resistor	220kΩ	¼W	R76	RD¼VS151J	Resistor	150Ω	¼W
R37	RD¼VS332J	Resistor	3.3kΩ	¼W	R77	RD¼VS151J	Resistor	150Ω	¼W
R38	RD¼VS332J	Resistor	3.3kΩ	¼W	R78	RD¼VS151J	Resistor	150Ω	¼W
R39	RD¼VS152J	Resistor	1.5kΩ	¼W	R79	RN2P0R5K	Resistor	0.5Ω	2W
R40	RD¼VS152J	Resistor	1.5kΩ	¼W	R80	RN2P0R5K	Resistor	0.5Ω	2W

Ref. Key	Parts No.	Description
R81	RN2P0R5K	Resistor 0.5Ω 2W
R82	RN2P0R5K	Resistor 0.5Ω 2W
R83	RS1P100K	Resistor 10Ω 1W
R84	RS1P100K	Resistor 10Ω 1W
R85	RD½PS471J	Resistor 470Ω ½W
R86	RD½PS471J	Resistor 470Ω ½W
R87	RD¼VS683J	Resistor 68kΩ ¼W
R88	RD¼VS683J	Resistor 68kΩ ¼W
R89	RS1P222K	Resistor 2.2kΩ 1W
R90	RS1P331K	Resistor 330Ω 1W

Ref. Key	Parts No.	Description
R91	RN2P100K	Resistor 10Ω 2W
R92	RS1P222K	Resistor 2.2kΩ 1W
R93	RS1P220K	Resistor 22Ω 1W
R94	RS1P100K	Resistor 10Ω 1W
R95	RS1P220K	Resistor 22Ω 1W
R96	RS1P220K	Resistor 22Ω 1W
R97	RS2P181K	Resistor 180Ω 2W

## CAPACITORS

Ref. Key	Parts No.	Description
C1	CEA2R2P50	Capacitor 2.2μF 50V
C2	CEA2R2P50	Capacitor 2.2μF 50V
C3	CKDYB101K50	Capacitor 100pF 50V
C4	CKDYB101K50	Capacitor 100pF 50V
C5	CKDYB101K50	Capacitor 100pF 50V
C6	CKDYB101K50	Capacitor 100pF 50V
C7	CQMA103K50	Capacitor 0.01μF 50V
C8	CQMA103K50	Capacitor 0.01μF 50V
C9	CQMA272K50	Capacitor 2700pF 50V
C10	CQMA272K50	Capacitor 2700pF 50V
C11	CEA100P16	Capacitor 10μF 16V
C12	CEA100P16	Capacitor 10μF 16V
C13	CEA4R7P35	Capacitor 4.7μF 35V
C14	CEA4R7P35	Capacitor 4.7μF 35V
C15	CEA101P35	Capacitor 100μF 35V
C16	CEA221P16	Capacitor 220μF 16V
C17	CEA010P50	Capacitor 1μF 50V
C18	CEA010P50	Capacitor 1μF 50V
C19	CKDYB101K50	Capacitor 100pF 50V
C20	CKDYB101K50	Capacitor 100pF 50V
C21	CKDYB330K50	Capacitor 33pF 50V
C22	CKDYB330K50	Capacitor 33pF 50V
C23	CKDYB101K50	Capacitor 100pF 50V
C24	CKDYB101K50	Capacitor 100pF 50V
C25	CEA100P16	Capacitor 10μF 16V

Ref. Key	Parts No.	Description
C26	CEA100P16	Capacitor 10μF 16V
C27	CEA4R7P35	Capacitor 4.7μF 35V
C28	CEA4R7P35	Capacitor 4.7μF 35V
C29	CQMA183K50	Capacitor 0.018μF 50V
C30	CQMA183K50	Capacitor 0.018μF 50V
C31	CQMA823K50	Capacitor 0.082μF 50V
C32	CQMA823K50	Capacitor 0.082μF 50V
C33	CQMA152K50	Capacitor 1500pF 50V
C34	CQMA152K50	Capacitor 1500pF 50V
C35	CQMA103K50	Capacitor 0.01μF 50V
C36	CQMA103K50	Capacitor 0.01μF 50V
C37	CKDYB331K50	Capacitor 330pF 50V
C38	CKDYB331K50	Capacitor 330pF 50V
C39	CEA010P50	Capacitor 1μF 50V
C40	CEA010P50	Capacitor 1μF 50V
C41	CQMA472K50	Capacitor 4700pF 50V
C42	CQMA472K50	Capacitor 4700pF 50V
C43	CEA221P25	Capacitor 220μF 25V
C44	CEA221P25	Capacitor 220μF 25V
C45	CKDYB151K50	Capacitor 150pF 50V
C46	CKDYB151K50	Capacitor 150pF 50V
C47	CEA470P25	Capacitor 47μF 25V
C48	CEA470P25	Capacitor 47μF 25V
C49	CKDYB470K50	Capacitor 47pF 50V
C50	CKDYB470K50	Capacitor 47pF 50V

## AMPLIFIER ASSEMBLY (CWK-135)

Ref. Key	Parts No.	Description			Ref. Key	Parts No.	Description		
C51	CKDYB221K50	Capacitor	220pF	50V	C61	CEA102P25	Capacitor	1000μF	25V
C52	CKDYB221K50	Capacitor	220pF	50V	C62	CCH-025	Capacitor	3300μF	50V
C53	CQMA473K50	Capacitor	0.047μF	50V	C63	CQMA154K50	Capacitor	0.15μF	50V
C54	CQMA473K50	Capacitor	0.047μF	50V	C64	CQMA154K50	Capacitor	0.15μF	50V
C55	CEA102P25	Capacitor	1000μF	25V	C65	CQMA154K50	Capacitor	0.15μF	50V
C56	CEA102P25	Capacitor	1000μF	25V					
C57	CEA101P35	Capacitor	100μF	35V					
C58	CEA331P35	Capacitor	330μF	35V					
C59	CEA471P16	Capacitor	470μF	16V					
C60	CEA221P16	Capacitor	220μF	16V					

## 10. FUSE UNIT (CWM-012)

- Parts List

Ref. Key	Parts No.	Description	Notes
Q1	G05-044-B, C	Transistor, 2SC945-Q, R	
Q2	G05-044-B, C	Transistor, 2SC945-Q, R	
D1	G00-003-A	Diode, 1N60	
D2	G00-003-A	Diode, 1N60	
D3	G00-003-A	Diode, 1N60	
D4	G00-003-A	Diode, 1N60	
R1	RD¼VS102J	Resistor, 1kΩ	¼W
R2	RD¼VS102J	Resistor, 1kΩ	¼W
R3	RD¼VS274J	Resistor, 270kΩ	¼W
R4	RD¼VS274J	Resistor, 270kΩ	¼W
R5	RD¼VS104J	Resistor, 100kΩ	¼W
R6	RD¼VS104J	Resistor, 100kΩ	¼W
R7	RD¼VS222J	Resistor, 2.2kΩ	¼W
R8	RD¼VS222J	Resistor, 2.2kΩ	¼W
R9	RD¼VS102J	Resistor, 1kΩ	¼W
R10	RD¼VS102J	Resistor, 1kΩ	¼W
C1	CEA010P50	Capacitor, 1μF	50V
C2	CEA010P50	Capacitor, 1μF	50V
C3	CEA010P50	Capacitor, 1μF	50V
C4	CEA010P50	Capacitor, 1μF	50V
C5	CEA010P50	Capacitor, 1μF	50V
C6	CEA010P50	Capacitor, 1μF	50V
C7	CQMA683K50	Capacitor, 0.068μF	50V
C8	CQMA683K50	Capacitor, 0.068μF	50V

Note: Fuses FU1~3 are not included in FUSE UNIT (CWM-012).  
Parts numbers of fuses are identified in the chassis exploded view on Page 40.

• Parts Connection

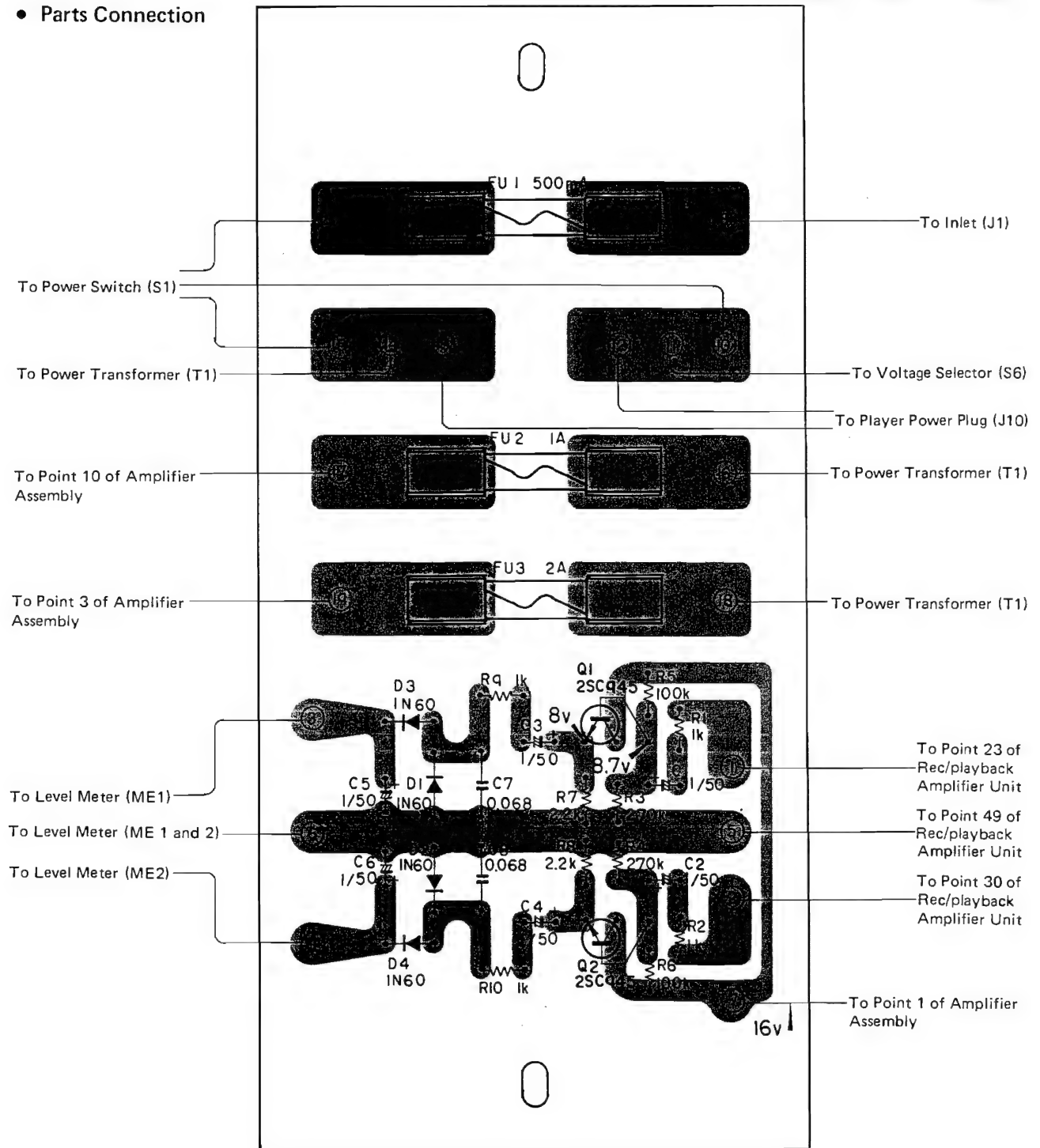


Fig. 26

- **Parts Connection**





• Parts List  
MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
Q1	G05-003-B	Transistor, 2SC460-B	MW/LW Select
Q2	G05-003-B	Transistor, 2SC460-B	
D1	G00-004-A	Diode, 1S188	
S1	CSH-035	Slide Switch	
T1	CTE-009	IF Transformer	
T2	CTB-029	Coil	
T3	CTD-001	Coil	
L1	CTX-040	Bar Antenna	
L2	T63-648	Coil, 5.5μH	
L3	T63-648	Coil, 5.5μH	
TC1	C43-607	Ceramic Trimmer	
TC2	C43-607	Ceramic Trimmer	
TC3	C43-607	Ceramic Trimmer	
TC4	C43-607	Ceramic Trimmer	

RESISTORS

Ref. Key	Parts No.	Description	Ref. Key	Parts No.	Description
R1	RD¼VS334K	Resistor 330kΩ ¼W	R6	RD¼VS472K	Resistor 4.7kΩ ¼W
R2	RD¼VS123K	Resistor 12kΩ ¼W	R7	RD¼VS153K	Resistor 15kΩ ¼W
R3	RD¼VS102K	Resistor 1kΩ ¼W			
R4	RD¼VS393K	Resistor 39kΩ ¼W			
R5	RD¼VS153K	Resistor 15kΩ ¼W			

CAPACITORS

Ref. Key	Parts No.	Description	Ref. Key	Parts No.	Description
C1	CCDSH220K50	Capacitor 22pF 50V	C6	CQMA473K50	Capacitor 0.047μF 50V
C2	CQMA473K50	Capacitor 0.047μF 50V	C7	CQMA473K50	Capacitor 0.047μF 50V
C3	CKDYF473Z25	Capacitor 0.047μF 25V	C8	CCDVK331J50	Capacitor 330pF 50V
C4	CKDYF473Z25	Capacitor 0.047μF 25V	C9	CQSA111J50	Capacitor 110pF 50V
C5	CQMA103K50	Capacitor 0.01μF 50V	C10	CCDSH330K50	Capacitor 33pF 50V



12. AM-IF/FM TUNER UNIT (CWE-145)

KH-3500

AM-IF/FM TUNER UNIT (CWE-145)

• Parts Connection

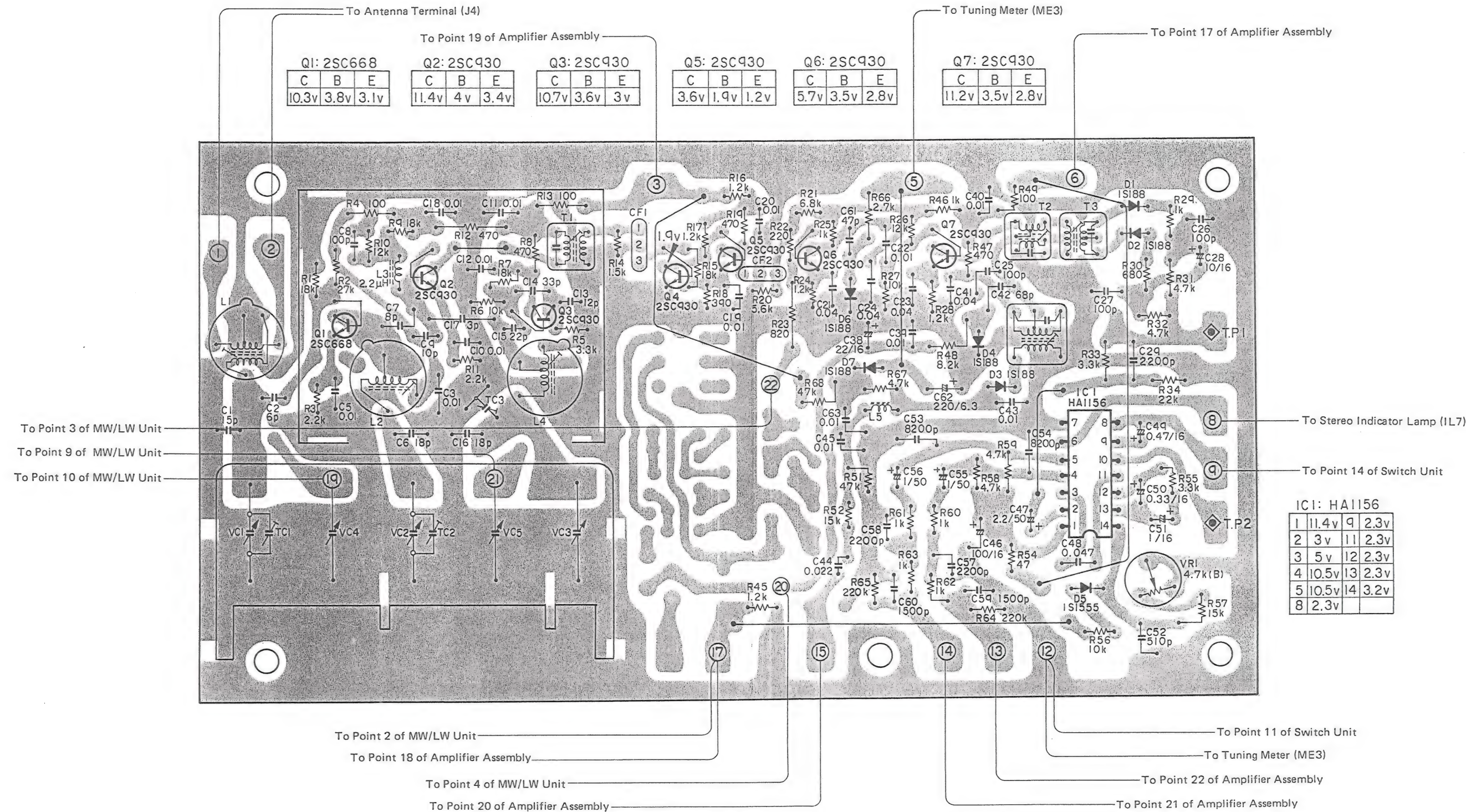


Fig. 28



## ● Parts List

## MISCELLANEOUS

Ref. Key	Parts No.	Description	Notes
IC1	G09-032-A	HA1156-WP	
Q1	G05-043-D	Transistor, 2SC668-D	
Q2	G05-047-D	Transistor, 2SC930-D	
Q3	G05-047-C	Transistor, 2SC930-C	
Q4	G05-047-C, D	Transistor, 2SC930-C, D	
Q5	G05-047-C, D	Transistor, 2SC930-C, D	
Q6	G05-047-C, D	Transistor, 2SC930-C, D	
Q7	G05-047-C, D	Transistor, 2SC930-C, D	
D1	G00-004-A	Diode, 1S188 (FM-1)	
D2	G00-004-A	Diode, 1S188 (FM-1)	
D3	G00-004-A	Diode, 1S188 (FM-1)	
D4	G00-004-A	Diode, 1S188 (FM-1)	
D5	G01-803-A	Diode, 1S1555	
D6	G00-004-A	Diode, 1S188 (FM-1)	
D7	G00-004-A	Diode, 1S188 (FM-1)	
T1	CTC-002	IF Transformer	FM Couple
T2	CTC-011	IF Transformer	FM Detector
T3	CTC-012	IF Transformer	FM Detector
T6	CTE-001	IF Transformer	AM Detector
L1	T22-020	Coil	FM ANT
L2	T21-023	Coil	FM RF
L3	CTF-010	Ferri-inductor 2.2 $\mu$ H	
L4	CTC-001	Coil	FM OSC
L5	CTF-008	Ferri-inductor 100mH	
CF1	CTF-038	Ceramic Filter	
CF2	CTF-038	Ceramic Filter	
VR1	C92-618	Volume	
TC1	CCL-046	Variable Capacitor	
TC2	CCL-046	Variable Capacitor	
TC3	CCG-008	Ceramic Trimmer	
VC1	CCL-046	Variable Capacitor	
VC2	CCL-046	Variable Capacitor	
VC3	CCL-046	Variable Capacitor	
VC4	CCL-046	Variable Capacitor	
VC5	CCL-046	Variable Capacitor	

## AM-IF/FM TUNER UNIT (CWE-145)

## RESISTORS

Ref. Key	Parts No.	Description			Ref. Key	Parts No.	Description		
R1	RD¼VS183J	Resistor	18kΩ	¼W	R31	RD¼VS472J	Resistor	4.7kΩ	¼W
R2	RD¼VS273J	Resistor	27kΩ	¼W	R32	RD¼VS472J	Resistor	4.7kΩ	¼W
R3	RD¼VS222J	Resistor	2.2kΩ	¼W	R33	RD¼VS332J	Resistor	3.3kΩ	¼W
R4	RD¼VS101J	Resistor	100Ω	¼W	R34	RD¼VS223J	Resistor	22kΩ	¼W
R5	RD¼VS332J	Resistor	3.3kΩ	¼W	R45	RD¼VS122J	Resistor	1.2kΩ	¼W
R6	RD¼VS103J	Resistor	10kΩ	¼W	R46	RD¼VS102J	Resistor	1kΩ	¼W
R7	RD¼VS183J	Resistor	18kΩ	¼W	R47	RD¼VS471J	Resistor	470Ω	¼W
R8	RD¼VS471J	Resistor	470Ω	¼W	R48	RD¼VS822J	Resistor	8.2kΩ	¼W
R9	RD¼VS183J	Resistor	18kΩ	¼W	R49	RD¼VS101J	Resistor	100Ω	¼W
R10	RD¼VS123J	Resistor	12kΩ	¼W	R51	RD¼VS473J	Resistor	47kΩ	¼W
R11	RD¼VS222J	Resistor	2.2kΩ	¼W	R52	RD¼VS153J	Resistor	15kΩ	¼W
R12	RD¼VS471J	Resistor	470Ω	¼W	R54	RD¼VS470J	Resistor	47Ω	¼W
R13	RD¼VS101J	Resistor	100Ω	¼W	R55	RD¼VS332J	Resistor	3.3kΩ	¼W
R14	RD¼VS152J	Resistor	1.5kΩ	¼W	R56	RD¼VS103J	Resistor	10kΩ	¼W
R15	RD¼VS183J	Resistor	18kΩ	¼W	R57	RD¼VS153J	Resistor	15kΩ	¼W
R16	RD¼VS122J	Resistor	1.2kΩ	¼W	R58	RD¼VS472J	Resistor	4.7kΩ	¼W
R17	RD¼VS122J	Resistor	1.2kΩ	¼W	R59	RD¼VS472J	Resistor	4.7kΩ	¼W
R18	RD¼VS391J	Resistor	390Ω	¼W	R60	RD¼VS102J	Resistor	1kΩ	¼W
R19	RD¼VS471J	Resistor	470Ω	¼W	R61	RD¼VS102J	Resistor	1kΩ	¼W
R20	RD¼VS562J	Resistor	5.6kΩ	¼W	R62	RD¼VS102J	Resistor	1kΩ	¼W
R21	RD¼VS682J	Resistor	6.8kΩ	¼W	R63	RD¼VS102J	Resistor	1kΩ	¼W
R22	RD¼VS221J	Resistor	220Ω	¼W	R64	RD¼VS224J	Resistor	220kΩ	¼W
R23	RD¼VS821J	Resistor	820Ω	¼W	R65	RD¼VS224J	Resistor	220kΩ	¼W
R24	RD¼VS122J	Resistor	1.2kΩ	¼W	R66	RD¼VS272J	Resistor	2.7kΩ	¼W
R25	RD¼VS102J	Resistor	1kΩ	¼W	R67	RD¼VS472J	Resistor	4.7kΩ	¼W
R26	RD¼VS123J	Resistor	12kΩ	¼W	R68	RD¼VS473J	Resistor	47kΩ	¼W
R27	RD¼VS103J	Resistor	10kΩ	¼W					
R28	RD¼VS122J	Resistor	1.2kΩ	¼W					
R29	RD¼VS102J	Resistor	1kΩ	¼W					
R30	RD¼VS681J	Resistor	680Ω	¼W					

# AM-IF/FM TUNER UNIT (CWE-145)

## CAPACITORS

Ref. Key	Parts No.	Description	Ref. Key	Parts No.	Description
C1	CCDSL150K50	Capacitor 15pF 50V	C40	CKDYF103Z25	Capacitor 0.01μF 25V
C2	CCDSL060D50	Capacitor 6pF 50V	C41	CKDYF403Z25	Capacitor 0.04μF 25V
C3	CKDYF103Z25	Capacitor 0.01μF 25V	C42	CCDSL680K50	Capacitor 68pF 50V
C5	CKDYF103Z25	Capacitor 0.01μF 25V	C43	CQMA103K50	Capacitor 0.01μF 50V
C6	CCDSL180K50	Capacitor 18pF 50V	C44	CQMA223K50	Capacitor 0.022μF 50V
C7	CCDSL080F50	Capacitor 8pF 50V	C45	CQMA103K50	Capacitor 0.01μF 50V
C8	CKDYB101K50	Capacitor 100pF 50V	C46	CEA101P16	Capacitor 100μF 16V
C9	CCDSL100F50	Capacitor 10pF 50V	C47	CEA2R2P50	Capacitor 2.2μF 50V
C10	CKDYF103Z25	Capacitor 0.01μF 25V	C48	CQMA473K50	Capacitor 0.047μF 50V
C11	CKDYF103Z25	Capacitor 0.01μF 25V	C49	CSYAR47M16	Capacitor 0.47μF 16V
C12	CKDYD103M50	Capacitor 0.01μF 50V	C50	CSYAR33M16	Capacitor 0.33μF 16V
C13	CCDSH120K50	Capacitor 12pF 50V	C51	CSYA010M16	Capacitor 1μF 16V
C14	CCDSH330K50	Capacitor 33pF 50V	C52	CQSA511J50	Capacitor 510pF 50V
C15	CCDCH220K50	Capacitor 22pF 50V	C53	CQMA822K50	Capacitor 8200pF 50V
C16	CCDSH180K50	Capacitor 18pF 50V	C54	CQMA822K50	Capacitor 8200pF 50V
C17	CCDCJ030C50	Capacitor 3pF 50V	C55	CEA010P50	Capacitor 1μF 50V
C18	CKDYF103Z25	Capacitor 0.01μF 25V	C56	CEA010P50	Capacitor 1μF 50V
C19	CKDYF103Z25	Capacitor 0.01μF 25V	C57	CQMA222J50	Capacitor 2200pF 50V
C20	CKDYF103Z25	Capacitor 0.01μF 25V	C58	CQMA222J50	Capacitor 2200pF 50V
C21	CKDYF403Z25	Capacitor 0.04μF 25V	C59	CQMA152J50	Capacitor 1500pF 50V
C22	CKDYF103Z25	Capacitor 0.01μF 25V	C60	CQMA152J50	Capacitor 1500pF 50V
C23	CKDYF403Z25	Capacitor 0.04μF 25V	C61	CCDSL470K50	Capacitor 47pF 50V
C24	CKDYF403Z25	Capacitor 0.04μF 25V	C62	CEA221P16	Capacitor 220μF 16V
C25	CKDYB101K50	Capacitor 100pF 50V	C63	CQMA103K50	Capacitor 0.01μF 50V
C26	CKDYB101K50	Capacitor 100pF 50V			
C27	CKDYB101K50	Capacitor 100pF 50V			
C28	CEA100P16	Capacitor 10μF 16V			
C29	CQMA222J50	Capacitor 2200pF 50V			
C38	CEA220P16	Capacitor 22μF 16V			
C39	CKDYF103Z25	Capacitor 0.01μF 25V			

# 13. MISCELLANEOUS PARTS LIST KH-3500

Ref. Key	Parts No.	Description	Notes
T1	CTT-072	Power Transformer	
HD1	CPB-023	Head	Rec/playback
HD2	CPB-024	Head	Erase
M	CXM-044	Motor	
SO	CXP-019	Solenoid Ass	
IL1	CEL-033	Lamp, 14V 60mA	Recording Ind.
IL2	CEL-033	Lamp, 14V 60mA	Level Meter
IL3	CEL-031	Lamp, 6.3V 150mA	Dial
IL4	CEL-031	Lamp, 6.3V 150mA	Dial
IL5	CEL-033	Lamp, 14V 60mA	Cassette Door
IL6	CEL-020	Lamp, 14V 60mA	Tuning Meter
IL7	CEL-033	Lamp, 14V 60mA	Stereo Ind.
ME1	CAW-014	Level Meter	(L)
ME2	CAW-014	Level Meter	(R)
ME3	CAW-030	Tuning Meter	
J1	CKP-010	Jack, Inlet	AC Input
J2	K72-627	Headphone Jack	Headphone
J3	CKF-033	Speaker Terminal	Speaker
J4	K31-013	Antenna Terminal	Antenna
J5	CKN-014	Mic Jack	Mic (L)
J6	CKN-014	Mic Jack	Mic (R)
J7	CKN-031	Jack	Phono (L)
J8	CKN-031	Jack	Phono (R)
J9	CKB-011	Pin Jack, 2P	AUX
J10	CDE-275	Connector, 3P	Player Power
S1	CSG-064	Push Switch	Power
S2	CSN-039	Leaf Switch	Motor
S3	CSN-021	Reed Switch	Sensing
S4	CSN-038	Leaf Switch	Pause
S5	CSN-037	Leaf Switch	Play
S6	CKA-004	Voltage Selector	
C1	CCG-003	Capacitor, 0.01 $\mu$ F	
C2	CCG-003	Capacitor, 0.01 $\mu$ F	
R1	RD $\frac{1}{2}$ PS221J	Resistor, 220 $\Omega$	$\frac{1}{2}$ W
R2	RD $\frac{1}{2}$ PS221J	Resistor, 220 $\Omega$	$\frac{1}{2}$ W

# 14. CABINET EXPLODED VIEW

## CABINET EXPLODED VIEW

NOTICE: Parts whose parts numbers are omitted are subject to being not supplied.

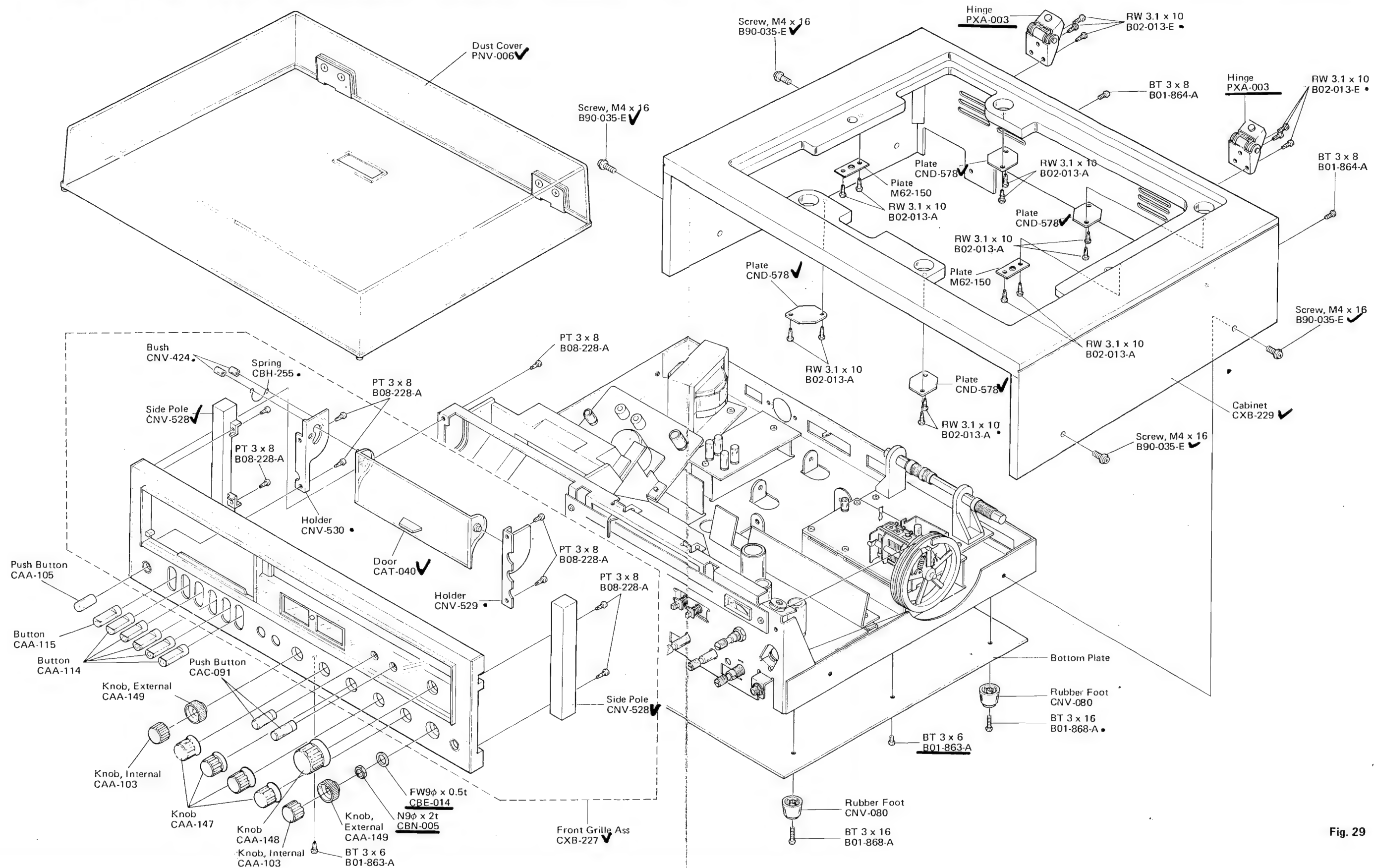
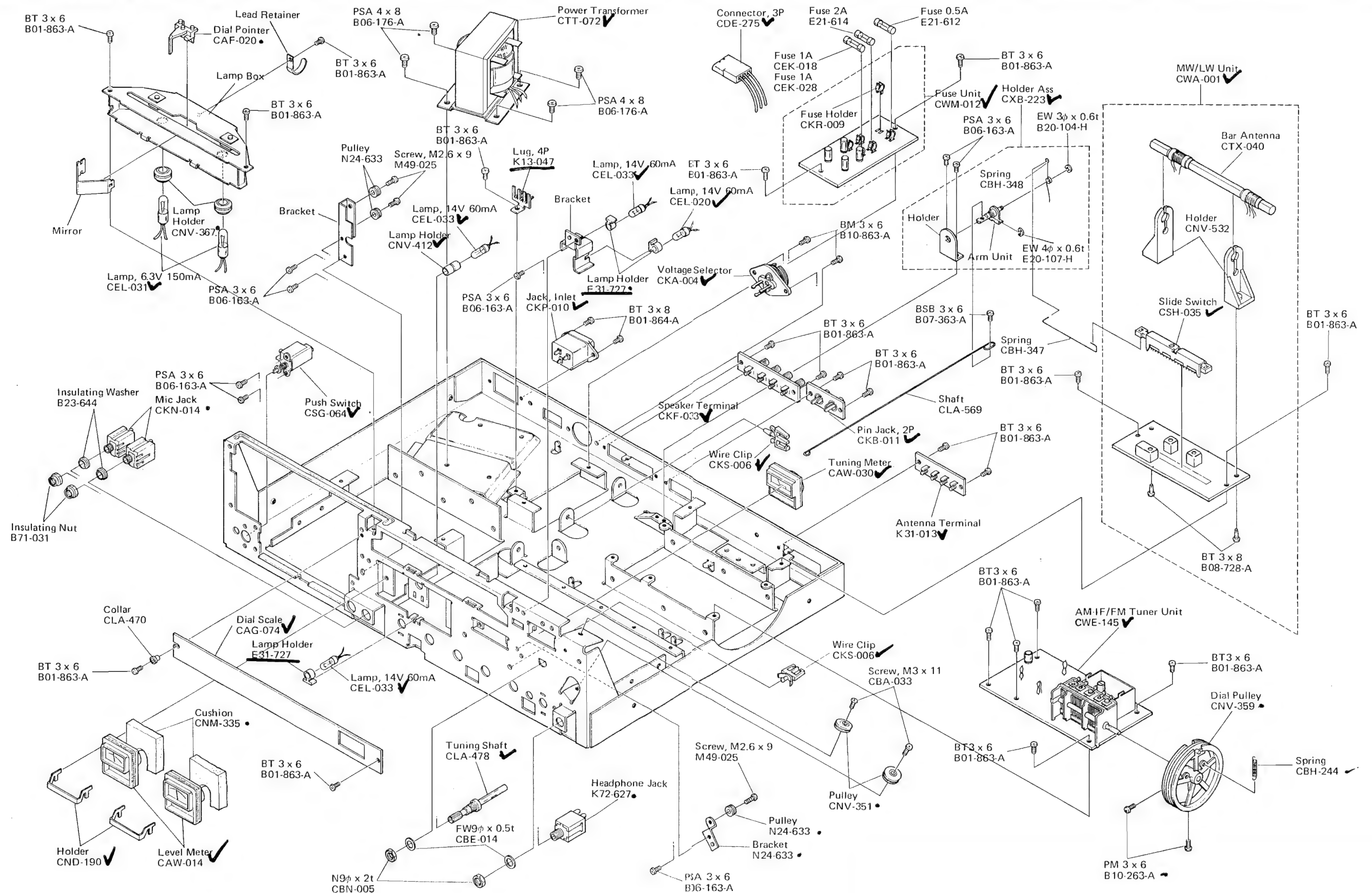


Fig. 29

## 15. CHASSIS EXPLODED VIEW

NOTICE: Parts whose parts numbers are omitted are subject to being not supplied.

**KH-3500**



**Fig. 30**



# 16. AMPLIFIER ASSEMBLY EXPLODED VIEW

NOTICE: Part whose parts number is omitted is subject to being not supplied.

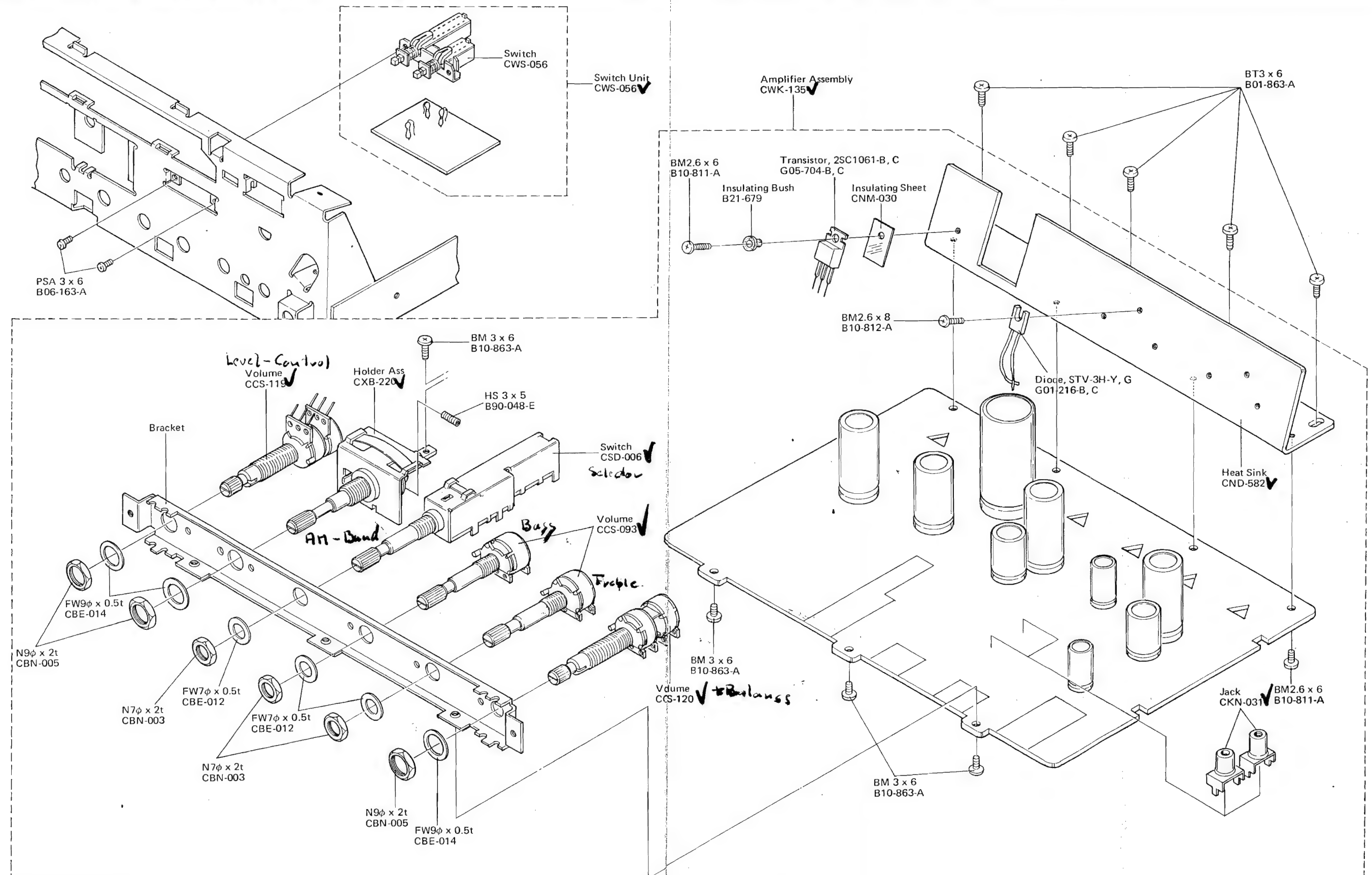
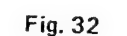


Fig. 31

**NOTICE:** Parts whose parts numbers are omitted are subject to being not supplied.

III KH-3500



# 18. CASSETTE MECHANISM

Those parts numbers are omitted are subject to being not supplied.

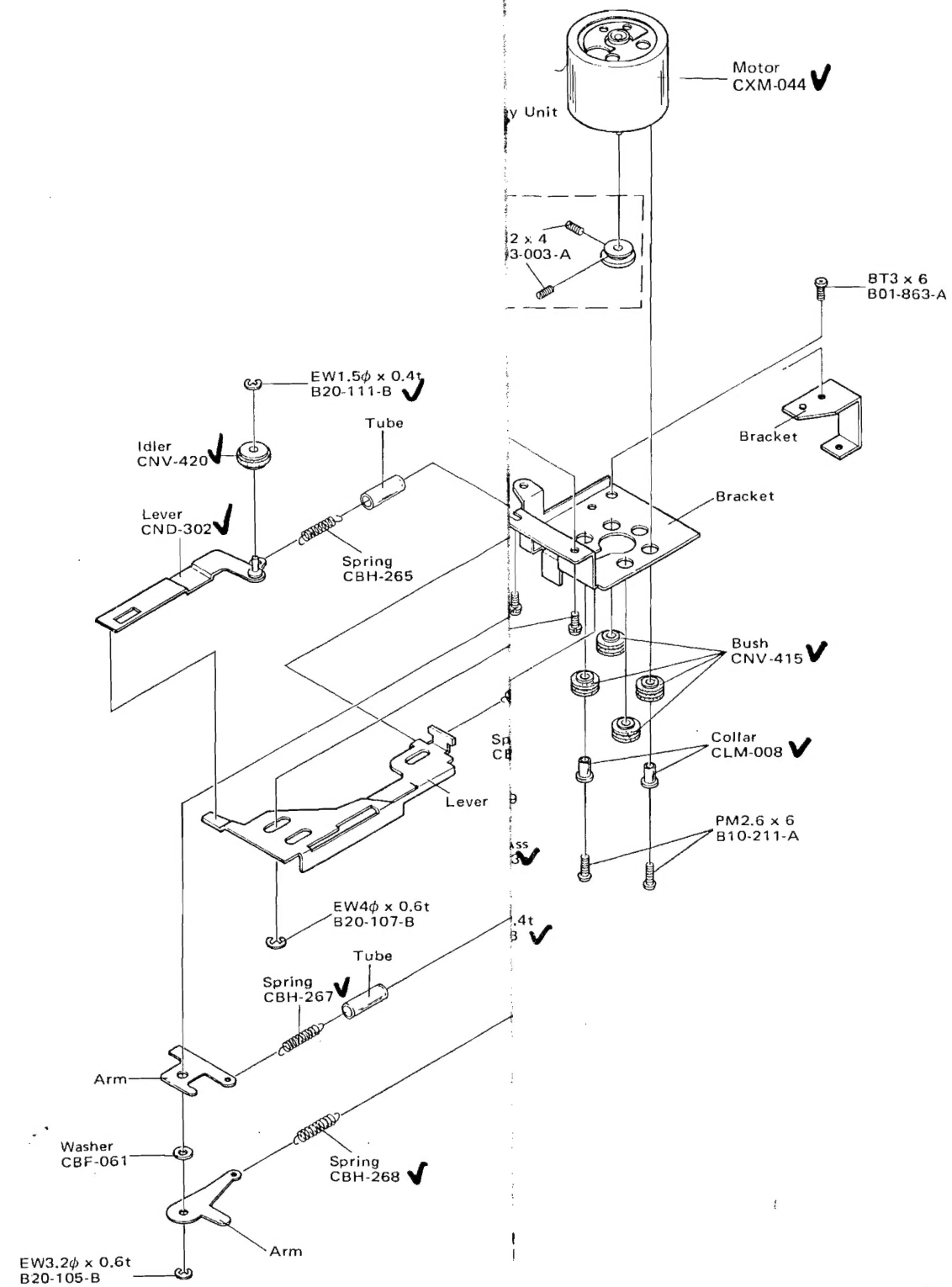


Fig. 33

NOTICE: Parts whose parts numbers are omitted are subject to being not supplied.

KH-3500

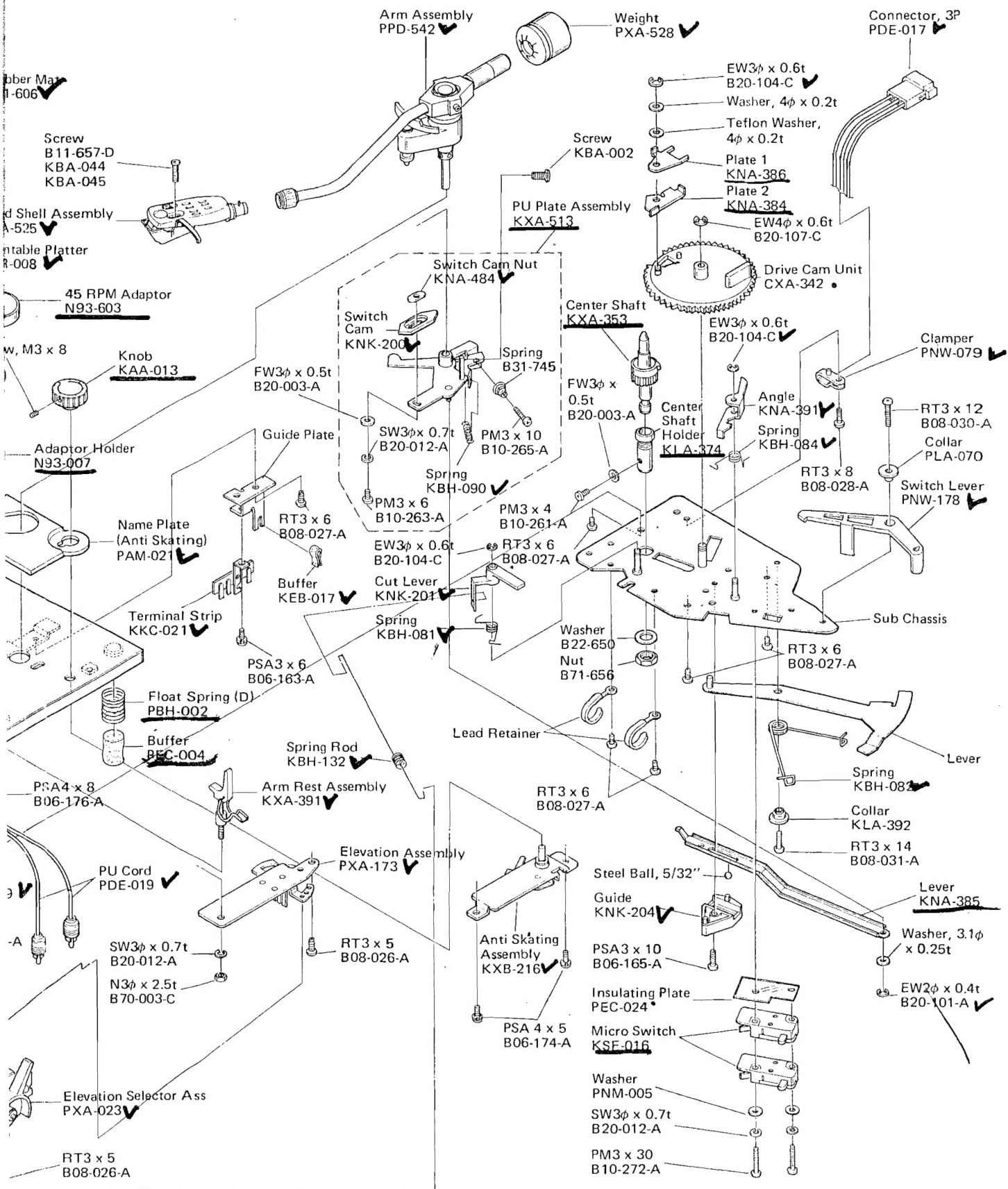


Fig. 34

## 20. PACKING METHOD KH-35

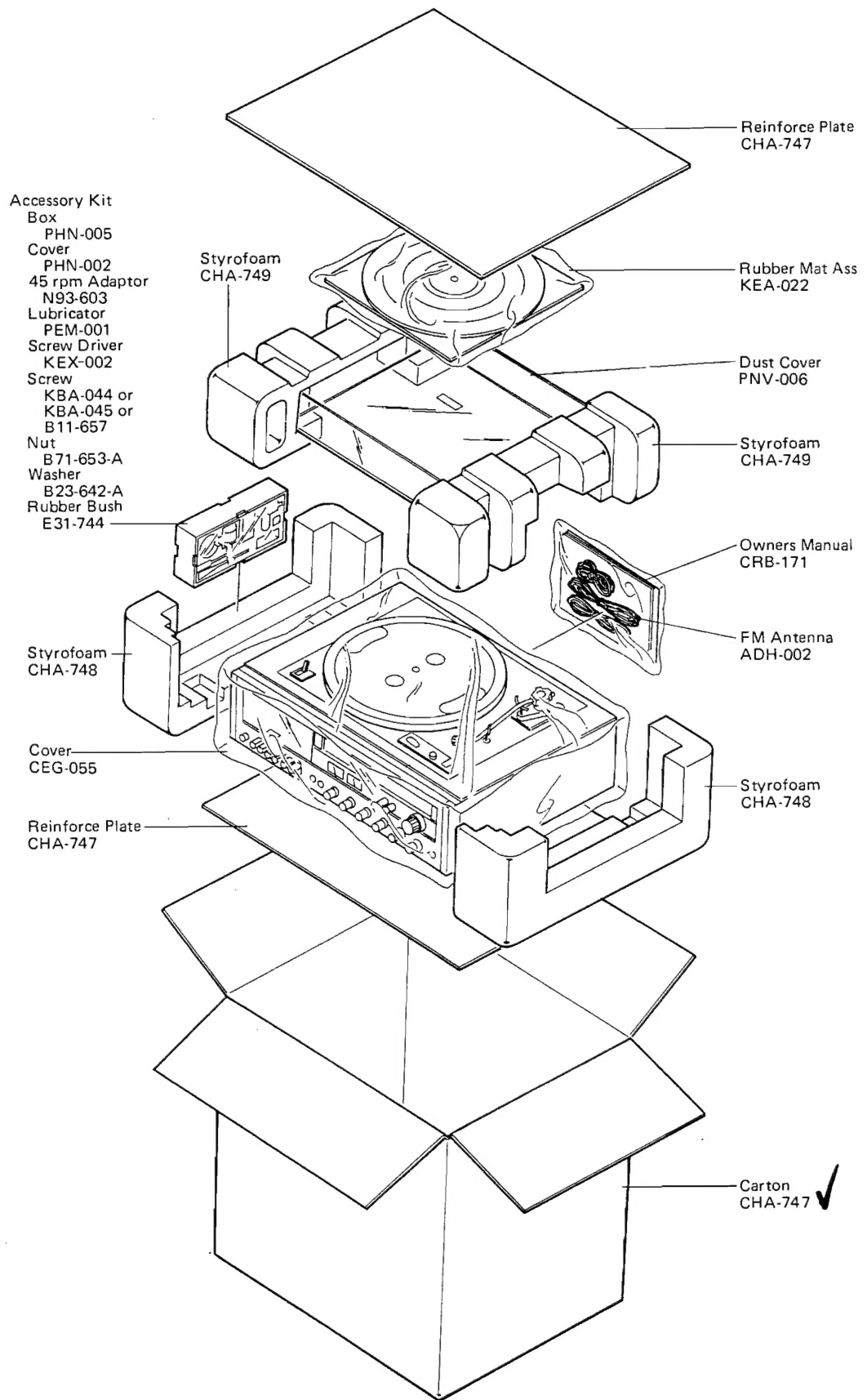





























Fig. 35

## 21. NOMENCLATURE OF SCREWS, WASHERS AND NUTS

The following symbols stand for screws, washers and nuts as shown in exploded view.

Symbol	Description	Shape
RT	Brazier head tapping screw	
PT	Pan head tapping screw	
BT	Binding head tapping screw	
CT	Countersunk head tapping screw	
TT	Truss head tapping screw	
OCT	Oval countersunk head tapping screw	
PM	Pan head machine screw	
CM	Countersunk head machine screw	
OCM	Oval countersunk head machine screw	
TM	Truss head machine screw	
BM	Binding head machine screw	
PSA	Pan head screw with spring lock washer	
PSB	Pan head screw with spring lock washer and flat washer	
PSF	Pan head screw with flat washer	

Symbol	Description	Shape
EW	E type washer	
FW	Flat washer	
SW	Spring lock washer	
N	Nut	
WN	Washer faced nut	
ITW	Internal toothed lock washer	
OTW	Outernal toothed lock washer	
SC	Slotted set screw (Cone point)	
SF	Slotted set screw (Flat point)	
HS	Hexagon socket headless set screw	
OCW	Oval countersunk head wood screw	
CW	Countersunk head wood screw	
RW	Round head wood screw	

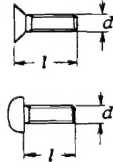
### EXAMPLE

PM 3x8

length in mm (  $l$  )

diameter in mm (  $d$  )

Symbol



FW 9φx1<sup>t</sup>

thickness in mm (  $t$  )

diameter in mm (  $d$  )

Symbol

